SIEMENS

# ARCOSKOP

SP

# Installation and Setting Instructions

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## Safety instructions and protective measures

⚠CAUTION

- **Connect the ARCOSKOP to a power supply that corresponds in its installation to the requirements of VDE0107 or the national regulations.**
  **Pull out or insert PC boards only with the system switched off and observe the ESD regulations!**
  **After switching off the ARCOSKOP wait for at least 3 minutes to allow the capacitor voltage to decay.**
  **Checks or settings that have to be made with X-ray radiation switched on are marked by the radiation warning symbol . Radiation protection clothing must be worn when performing settings marked with this symbol.**
- **In the case of non-compliance there is a risk of physical injury; the system can also be damaged.**
- **Work may be performed only according to the valid General Guidelines for the Technical Department ARTD 2, especially the safety instructions TD00-000.860.01.01.**

- At least 2 people are required to perform the installation.

## General information

- Unless otherwise stated, all measurements in this document are given in mm.
- Complete the installation checklist in Chapter 6 during installation. The service provider must sign this checklist when turning the system over to the project manager.

  **- The service provider or engineer must confirm any text, settings, installation steps, and controls marked with " " in the installation checklist (Register 6).**

- Prior to starting the installation, check the room height and the height of the lowered ceiling against the measurements provided in the room planning diagram.
- Check the height adjustment for the stand.
- Check the pre-installation using the pre-installation checklist in the pre-installation instructions SPR2-250.811.

## Required documentation

Room planning diagram: included in the pre-installation delivery.

Project plan: generated by the appropriate planning department; must be available to the project manager on-site during installation.

## Auxiliary materials needed for installation

- tool kit, including small torque wrench
- two ladders of adequate height, or scaffolding
- installation accessory for stand and electronics unit (not included in delivery volume; see project manager's ARCOSKOP planning guide)
- torque wrench set (3-20 Nm), e.g., order number 34 24 553
- torque wrench set (20-100 Nm), e.g., order number 80 86 159 RE999 with a second extension
- spirit level
- plug-in cable lugs - 0.75 to 6 $mm^2$
- hole cable lugs - 0.75 to 16 $mm^2$ for M3 to M8 screws
- crimp lugs - 0.75 to 6 $mm^2$
- crimping tool - 0.75 to 16 $mm^2$
- electronic soldering iron
- cable ties and insulating tape

## Delivery volume

- Prior to starting the installation, check the packing slips to ensure that delivery is complete and undamaged.
- If delivery is not complete or contains damaged goods, the project manager must be informed immediately.

## Attaching the stand

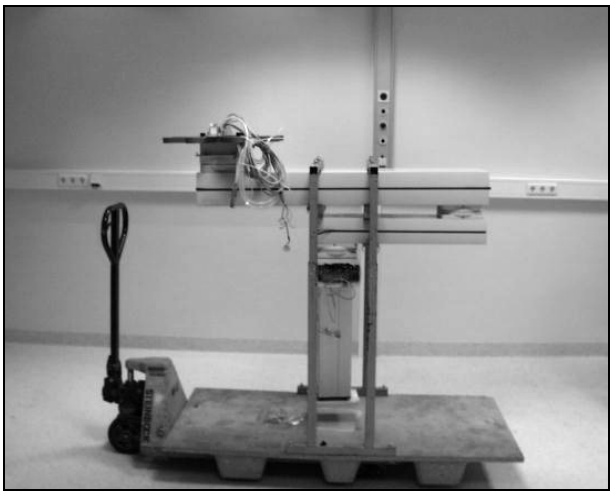


Fig. 1 Crate plus stand

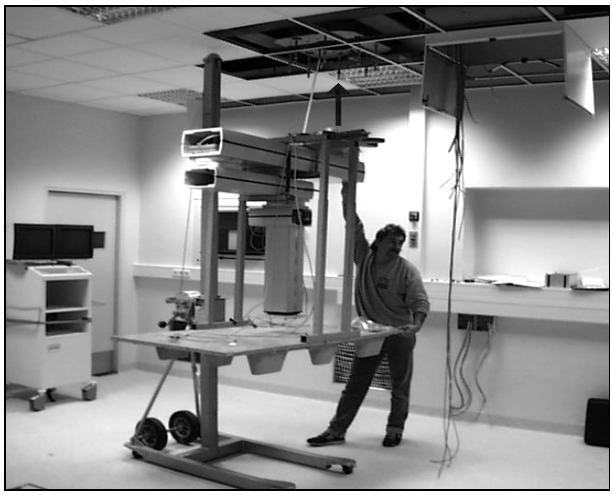


Fig. 2 Stand installation

- Completely remove the side and top components of the crate if applicable; see Fig. 1.
- Remove the ceiling panel/canopy cover if present, refer to the ARCOSKOP pre-installation instructions.
- Screw the 8 nuts (not self-locking) onto the threaded rods of the sub-ceiling; see the arrow in Fig. 2.

Fig. 3 Stand flange

- Using tape, attach the upper insulating washers and washers on top to the 8 holes of the flange as shown in Fig. 3.

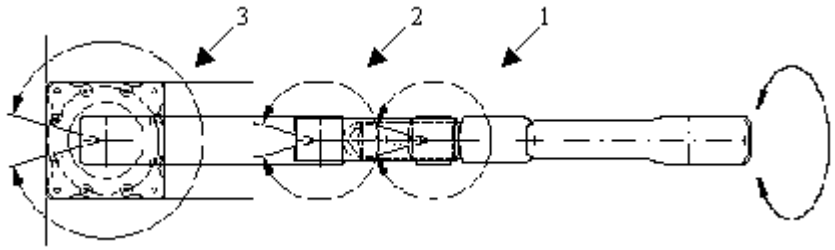



Fig. 4 Top view of system

- Position the stand under the sub-ceiling as outlined in the project plan. Take into account the limits on rotational movement Fig. 4.

### Dimensions of the pre-installation kits

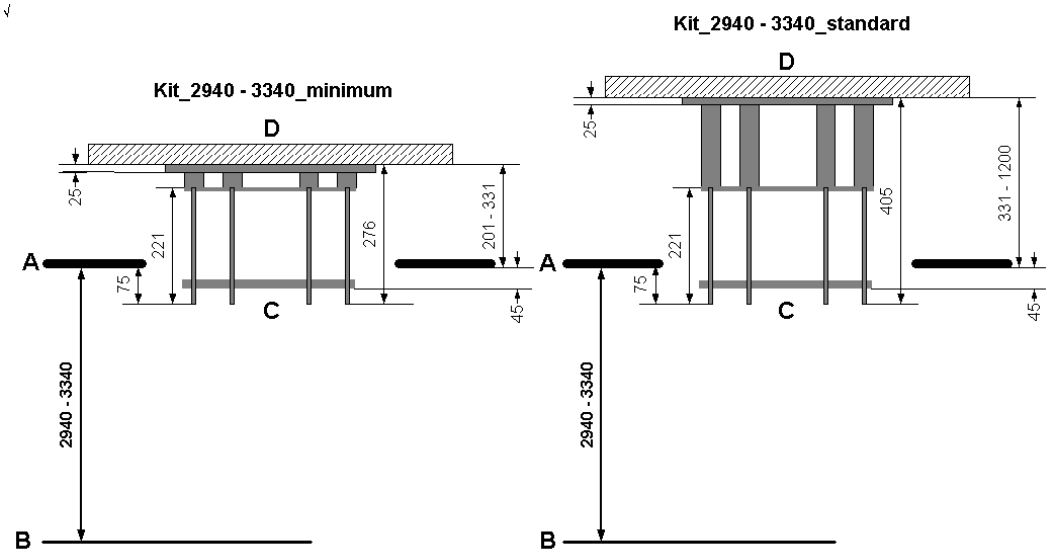



Fig. 5 Kit 2940-3340

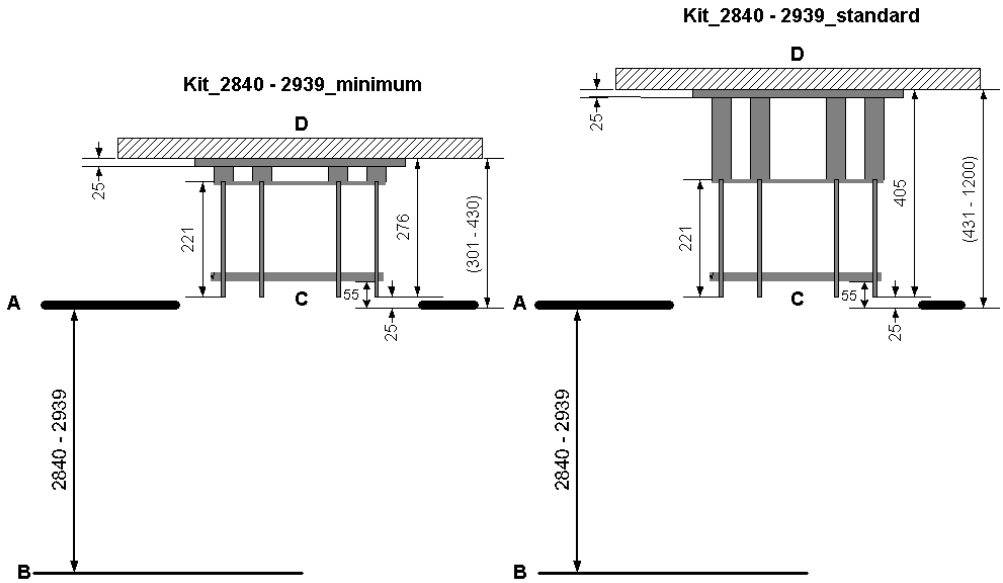



Fig. 6 Kit 2840-2939

- Install the stand flange at the stated height corresponding to the existing pre-installation kit.
- For a false ceiling height of 2940 - 3340 mm the distance between the bottom edge of the false ceiling and bottom edge of the flange is 45 mm, Fig. 5.
- For a false ceiling height of 2840 - 2939 mm the distance between the bottom edge of the false ceiling and bottom edge of the flange is 55 mm, Fig. 6.

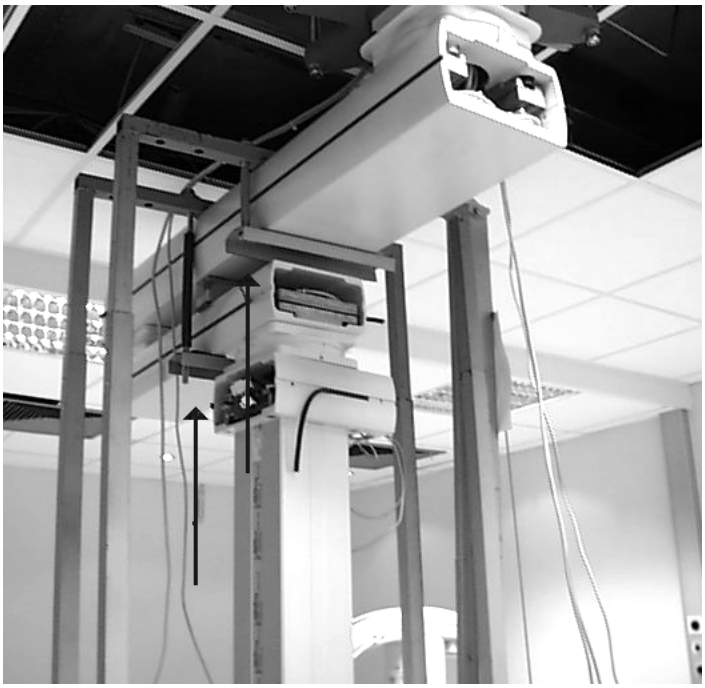
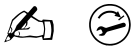


Fig. 7 Stand transport device

- Use a forklift to raise the pallet so that the flange almost touches the washers of the threaded rods of the sub-ceiling.
- Remove the adhesive tape from the U washers.
- Use the spirit level to level the stand flange horizontally.



- Tighten the flange to 70 Nm using the 8 self-locking nuts, washers and insulating washers.
- Remove the lower attachments (U washers) and lateral rods; see Fig. 7.
- Slide the pallet forward and remove it.
- Turn the column by 180 degrees so that the opening for connecting the corrugated hoses faces the anchor plate.

## Installing the height adjustment

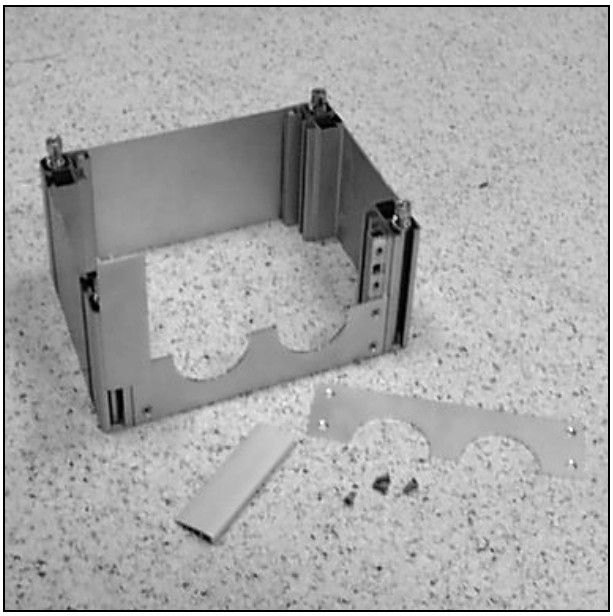


Fig. 8 Height adjustment

Fig. 9 Corrugated hoses

- Remove both corrugated hose attachment plates from the height adjustment; see Fig. 8.
- Attach the height adjustment to the stand. The cable outlet should be on the side of the stand where the corrugated hose inlets are located; see Fig. 9.
- Attach the height adjustment to the top using the four M 8 x 50 mm Allen screws (included). Tighten the screws to 25 Nm.

## Opening the C-arm crate

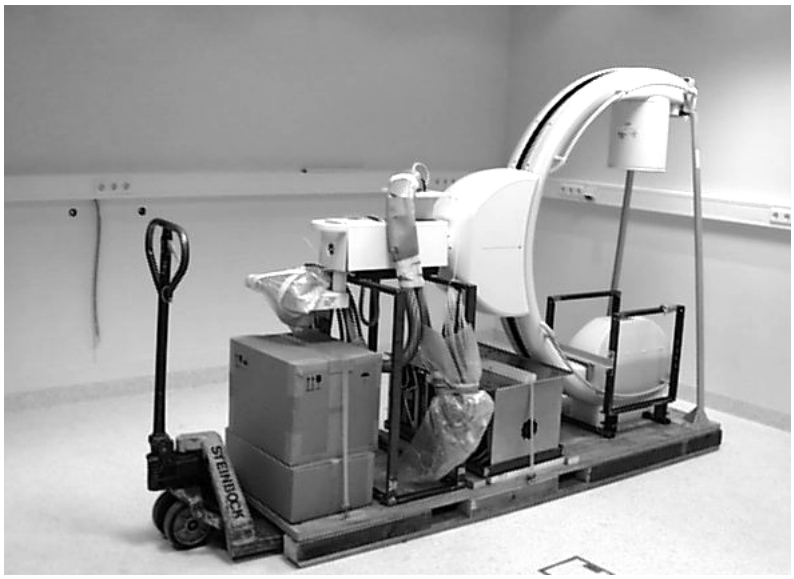



Fig. 10 C-arm crate

- Remove the four sides and cover, if applicable.
- Release the locking mechanism from the C-arm on the upper side and the electronics unit; see Fig. 10.
- Remove the rack from the single tank attachment. It will be used later for the electronics box unit.

## Installing the electronics unit

**⚠CAUTION**

**Before starting work, all on-site connection terminals for the power supply of the system must be deenergized!**

**In the case of non-compliance there is a risk of severe physical injury or even death.**

**Work may be performed only according to the valid General Guidelines for the Technical Department ARTD 2, especially the safety instructions TD00-000.860.01.01..**

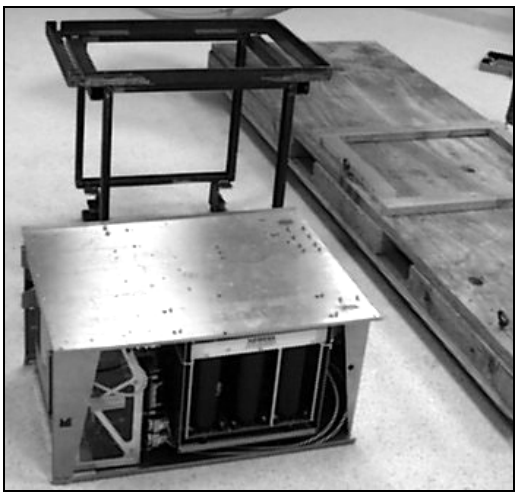


Fig. 11 E-box rack frame 1

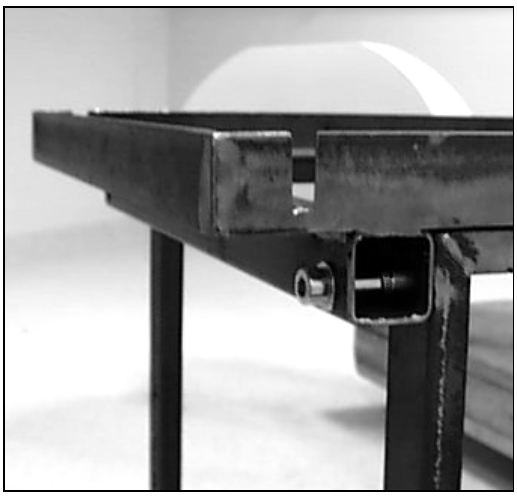


Fig. 12 E-box rack frame 2

- Move the frame from the pallet to the rack; see Fig. 11.
- Attach the frame to the rack at all four corners using the supplied screws, nuts and washers; see Fig. 12.

Fig. 13 E-box forklift forks

- Ensure that the unit is securely positioned on the forks; see Fig. 13.
- Remove the front capacitor bank. This will make it easier to route the cables and connect them to the terminal strips; see Fig. 14.
- Align the electronics unit with the electronics box ( the cable connection side of the unit, where the capacitor bank was removed, should face the cable outlet of the E-box).

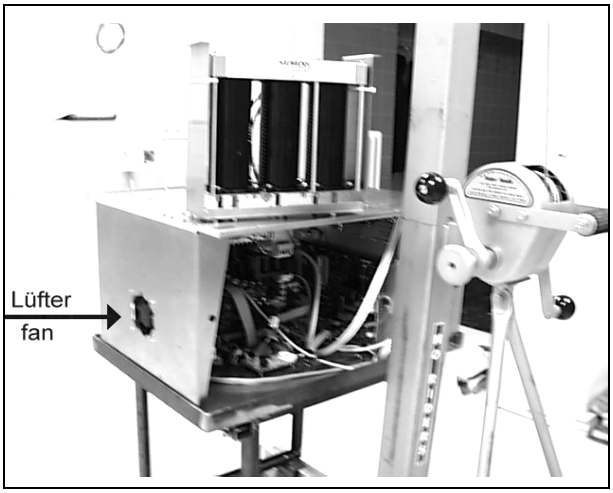



Fig. 14 E-box unit 1

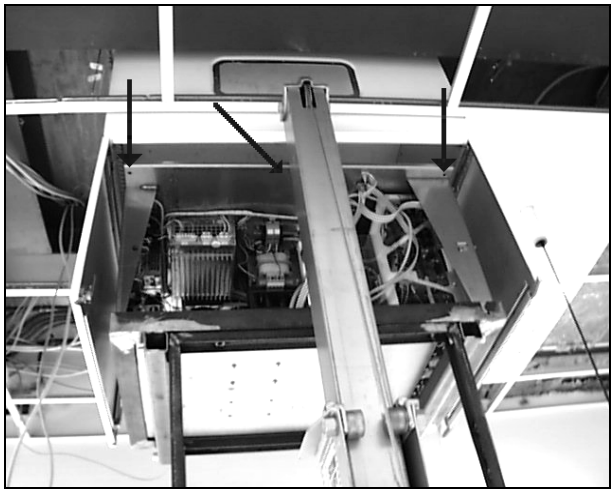


Fig. 15 E-box unit 2

- Move the unit into the E-box and use the 6 supplied M8 x 12 mm Allen screws to attach it to the floor of the E-box, 3 screws on each long end; see Fig. 15.

Fig. 16 lock

- The cover must be latched shut; see Fig. 16.
- Remove the marked screws on the side of the latch.

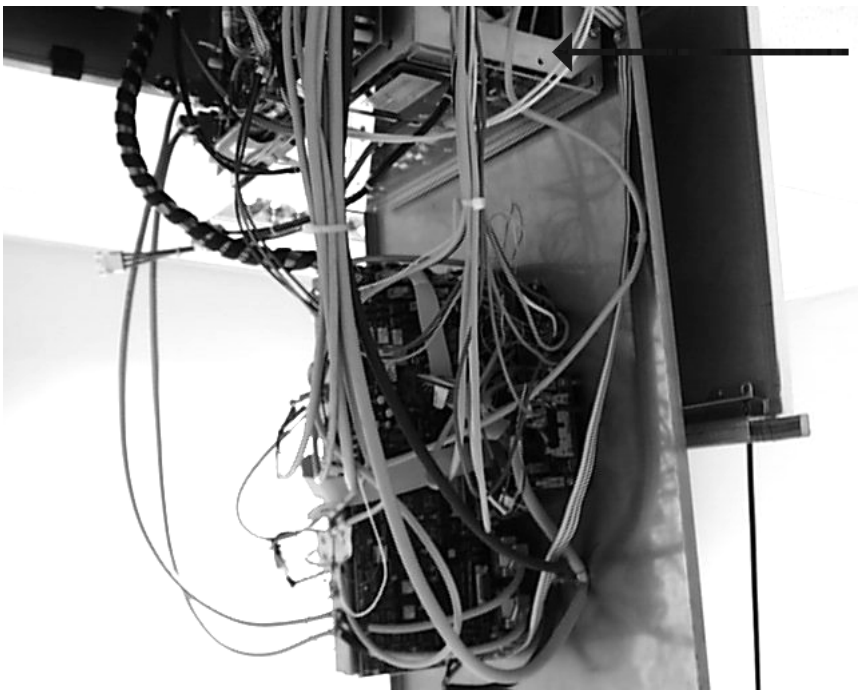


Fig. 17 E-box unit hinged cover

- Open the latch. Be prepared for the weight of the hinged cover; see Fig. 17.
- Lower the cover.
- Remove the attachment screws on the side to lower the generator component; see the arrow in Fig. 17.

## Installing the C-arm

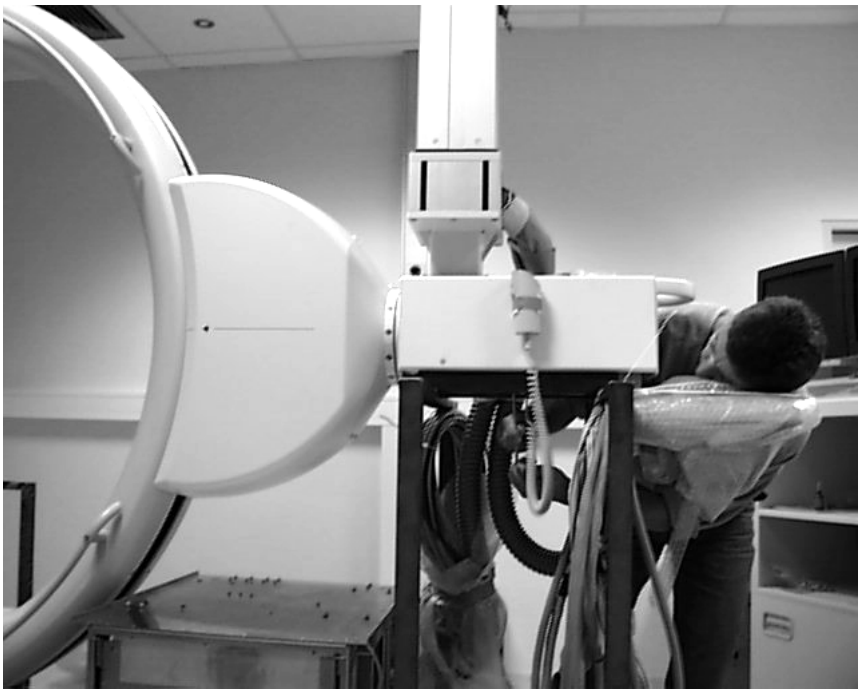


Fig. 18 C-arm stand

- Position the C-arm flange correctly relative to the stand; see Fig. 18. The cable outlet from the height adjustment should be in the direction of the hand grip on the stand.
- Use the forklift to raise the pallet so that the horizontal flange of the C-arm can be attached to the flange on the vertical column/height adjustment. If the forklift cannot be raised high enough, 2 x 4's should be placed on the forks.
- Attach the four M8 x 50 mm Allen screws to 25 Nm.
- Remove the control console from the rack.
- Remove the rack from the horizontal beam.
- Rotate the control console to the outside and attach it to the two supports.

## System cabling

Fig. 19 Corrugated hoses

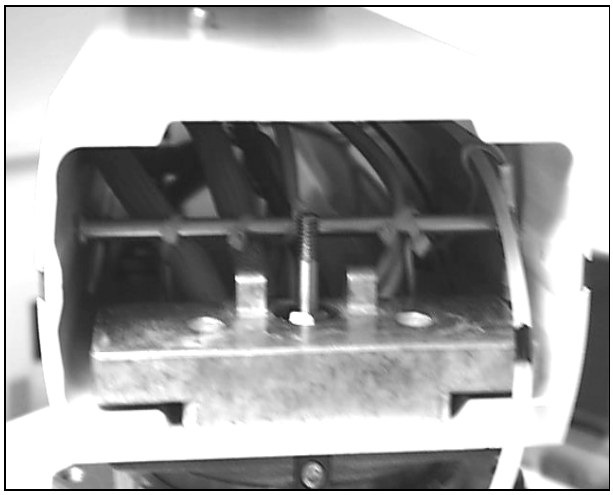


Fig. 20 Cable positioning beam

- Disassemble the covers of the support arms by moving the rubber bands approximately 15 cm; see Fig. 19. Remove the screws from the end cover clips, and use a thin screw driver to press the clip inward while simultaneously pulling out the end cover.

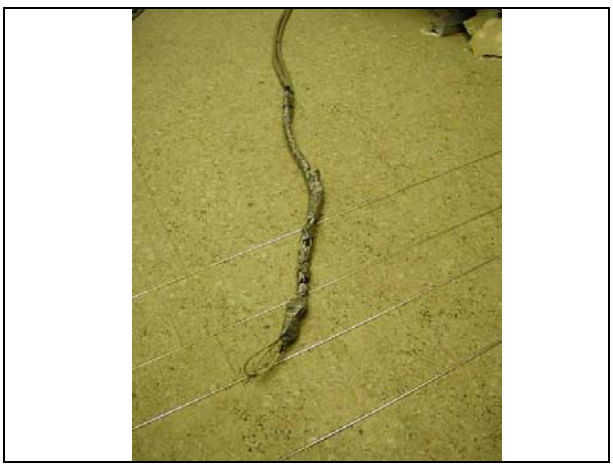


Fig. 21 System cable 1

Fig. 22 Brake 1

- Protect the sensitive connections and connectors of the two system cables using tape. See Fig. 21
- During cabling, it is necessary to remove the upper brake board in the center support arm; see Fig. 20.
- Remove the compressed air connection, the safety nut, and bronze bushing, and remove the upper part. Note the notch on the bronze bushing; it will be realigned with the nub during installation. See Fig. 22.
- The attachment rings for the corrugated hoses should be attached prior to cabling.

- Start the cable routing into the stand at the flange of the vertical column/height adjustment, and continue from one support arm to the other in the direction of the E-box; see Fig. 19.
- The corrugated hoses are approximately 1200 mm long to allow for the vertical column lift of 400 mm.
- Attach the two attachment rings at the top of the corrugated tube openings.
- Attach the protective conductor in the corrugated hose to the marked protective conductor screw holes in the height adjustment and articulated arm.
- When attaching the corrugated hose to the height adjustment, ensure that the hoses are installed on the top of the outlet in order to enable column lift.

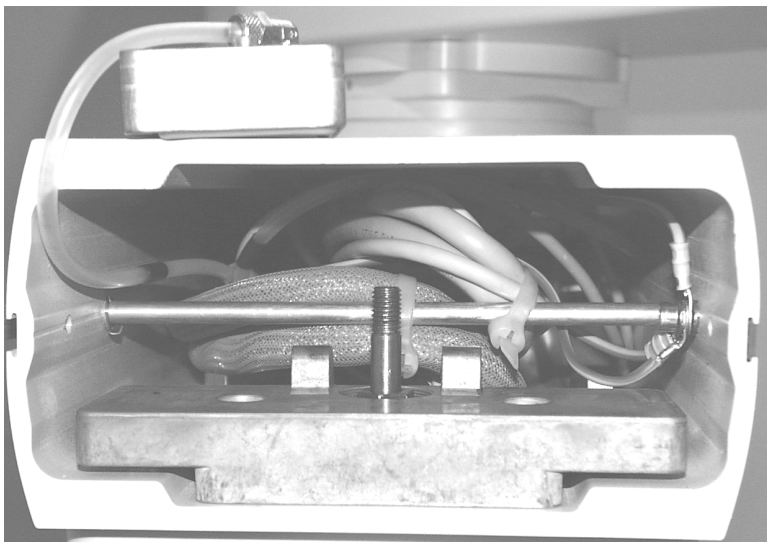


Fig. 23 Cable fixing rod_2

**NOTE**

**The cables on the support arm must not become twisted. Otherwise, the resulting cable tension could move the stand when working with brakes disengaged.**

- For each of the other support arms, the cable should be fastened to the diagonal beams so that there is sufficient free room for the cable in the support arm transition area; see Fig. 23.

**NOTICE**

**When the stand column is turned, the cables must not be crushed or strained!**

**The cables at the first support arm transition (transverse rod) must not be fastened twisted!**

- Connect the compressed air hose connection to the compressed air connection on the interface board.

- Reinstall the brake board in the center support arm. Pay attention to proper positioning of the nub relative to the notch. Use a 17 mm open-ended wrench to loosely attach the brake board. Approximately 2 mm of play is needed for the brakes.

- Attach the cable on the interface board with cable ties. Since the Arcoskop will need to be rotated within the room, make sure that the cable has enough room at the cable outlet to move freely.

**NOTICE**

**When the stand is turned the cables must not be twisted severely and they must not be crushed or strained!**

**The cables must not be fastened twisted!**

- Attach the protective conductor connections in the corrugated hose to the height adjustment and the first (smallest) support arm at the marked screws
- Remove the cable inlet board from the electronics box.
- Route the cable to and through the cable outlet with silicon to the E-box. Check the cables that were routed to the E-box using the system connections and the fixed point list in the "Component cabling" chapter.

## Compressed air connection

### Compressed air connection via clinic's copper line

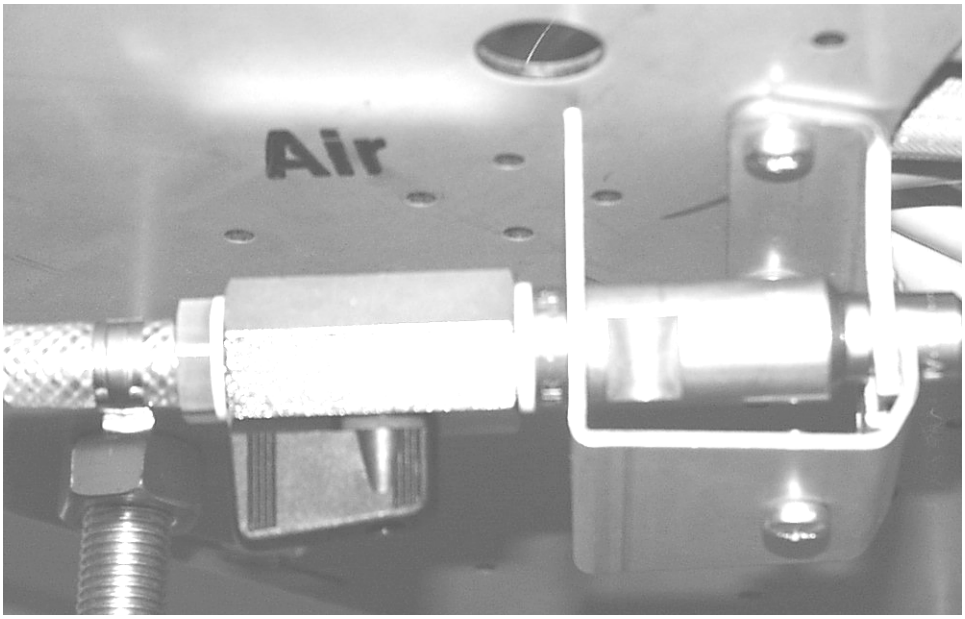



Fig. 24 Compr_Connection_ARC_3

- Connect the air hose connection with the ARCOSKOP shut-off valve to the interface plate compressed air connection and screw on the locking mechanism; see Fig. 24.
- To shut off the air supply to the ARCOSKOP, turn the shut-off valve; see Fig. 26.
- Open the air supply to the OR room. Using a pressure gauge, verify that the permissible pressure of 5 bar ± 10% is present.

### Compressed air connection via compressor air hose

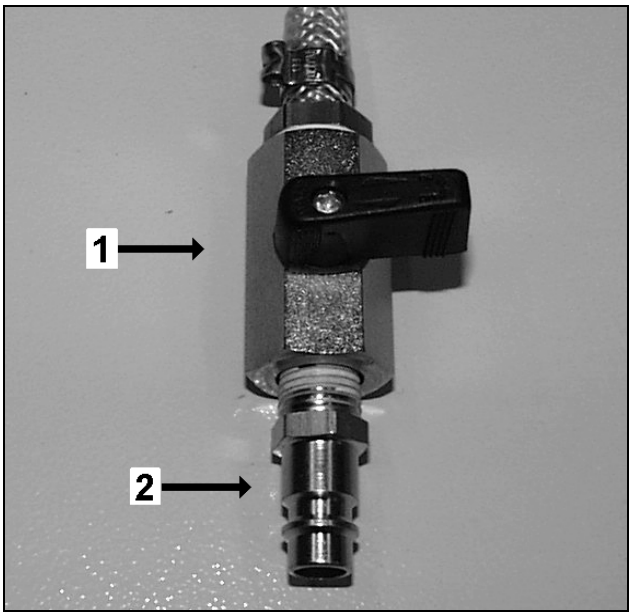



Fig. 25 Compr_Connection_ARC_1

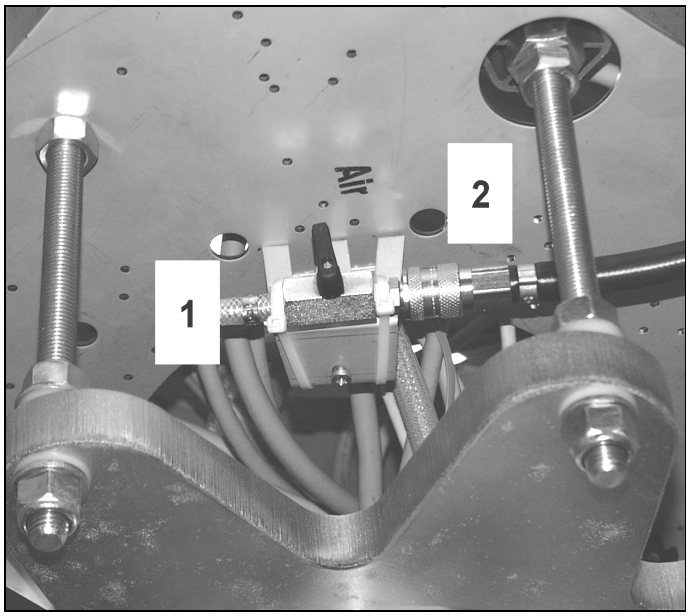



Fig. 26 Compr_Connection_ARC_2

- The end of the compressor air hose is located on the ARCOSKOP interface plate. The quick coupler 2/Fig. 26 for the shut-off valve connects to this hose connection, 2/Fig. 25.
- Remove the existing quick coupler from the ARCOSKOP shut-off valve. Replace with the quick coupler at the end of the compressor air hose and screw tight to the shut-off valve; 1/Fig. 25 and 2/Fig. 25.
- Connect the ARCOSKOP shut-off valve to the compressor air hose and fasten with two cable connectors; see Fig. 26.
- Turn the shut-off valve to stop the air supply to the ARCOSKOP; see Fig. 26.
- Using the following pictures, visually inspect the pre-assembly of the compressor and air filter system for completeness.
- If necessary, the pre-installation can be completed using the available ARCOSKOP pre-installation instructions.

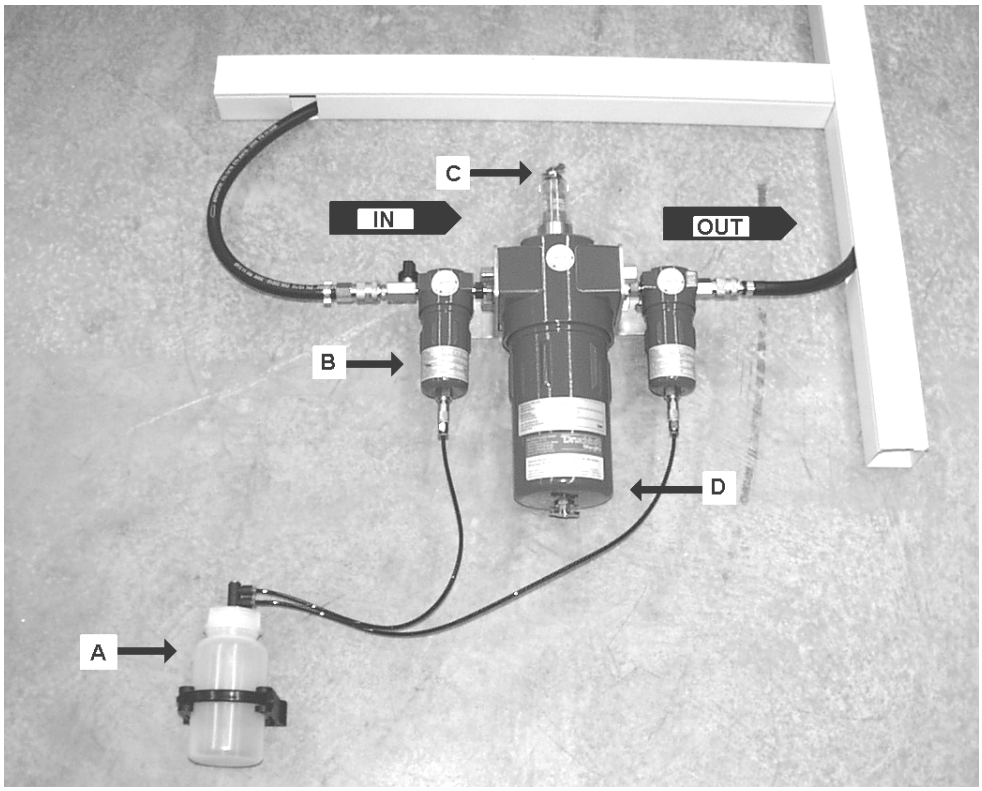



Fig. 27 Compressor_1

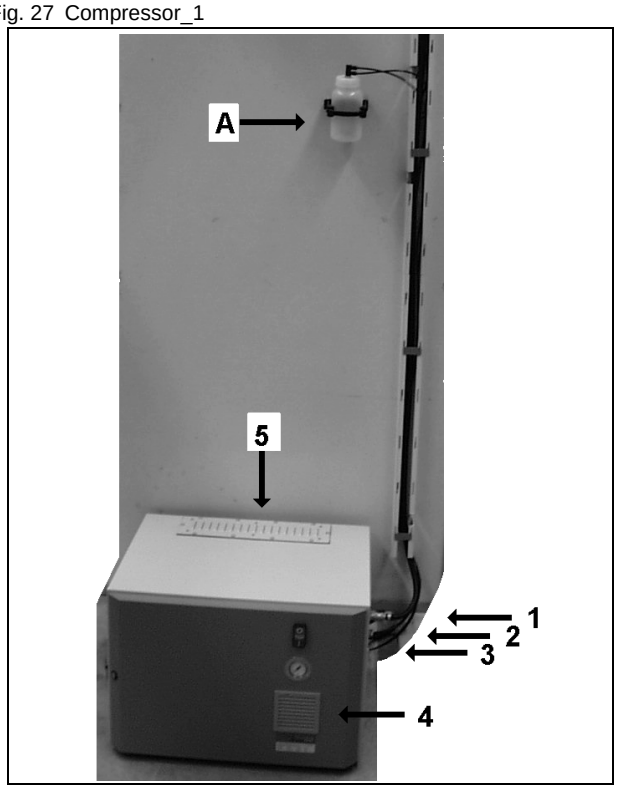



Fig. 28 Compressor

**Filtering system:**

A - Collector bottle

B - Filter

C - Color indicator

D - Filter

IN - from compressor

OUT - to ARCOSKOP

**Compressor:**

A - Collector bottle

1 - Compressed air connection

2 - Line voltage connection

3 - Collector bottle connection

4 - Fresh air intake ventilator

5 - Exhaust

- Switch on the compressor and, using a pressure gauge, verify that the permissible pressure of 5 bar ± 10% is present (Fig. 27 and Fig. 28).

## Installing the foot switch, if needed

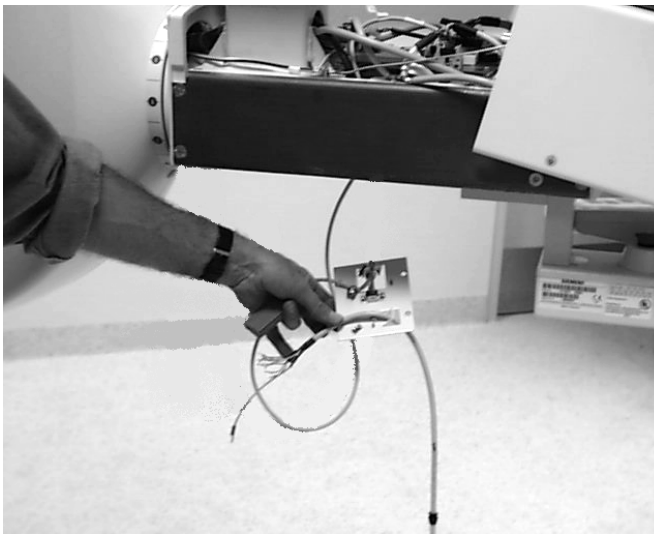


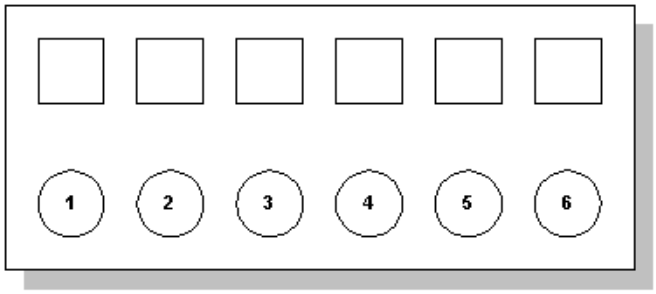
Fig. 29 Foot switch

- Route the cable through the opening and connect the braiding to the clamp; see Fig. 29.
- Using the following list, insert the pins into the supplied plug X4 STANDARD or X5 GASTRO.

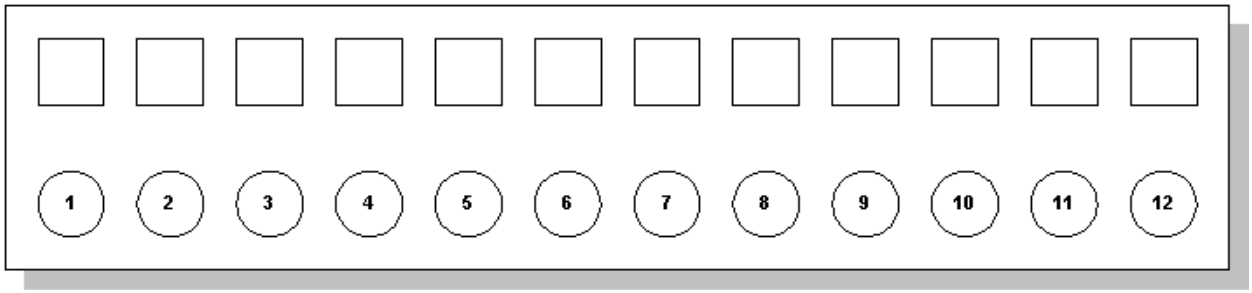
Fig. 30 Foot switch holder

- Install the foot switch holder according to Fig. 30 with 2 screws.

- View from the connection side




STANDARD




GASTRO

- STANDARD:
  - 1 - blue
  - 2 - black
  - 3 - --
  - 4 - brown
  - 5 - white
  - 6 - --
- GASTRO:
  - 1 - brown
  - 2 - red
  - 3 - --
  - 4 - yellow
  - 5 - green
  - 6 - --
  - 7 - white
  - 8 - black
  - 9 - grey
  - 10 - violet
  - 11 - blue

- Route the line with the plug from below, through the vertical column to board D40.
- Insert the plug into board D40.X4 STANDARD or D40.X5 GASTRO.
- Reattach the covers to the stand.

## Installing the monitor suspension system, if present

### Installing the stand

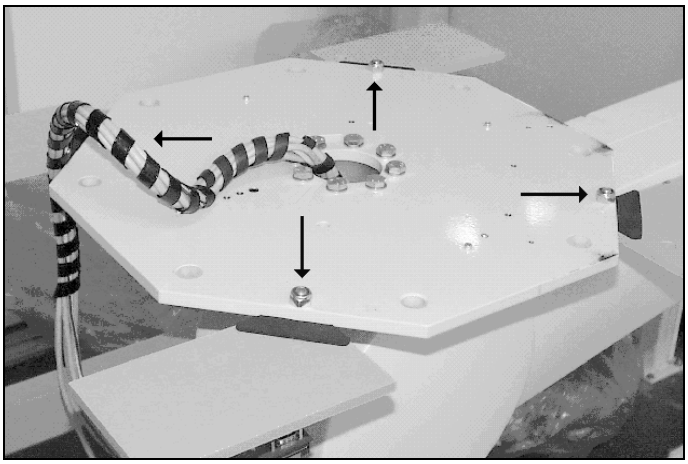


Fig. 31 Monitor suspension system stand flange

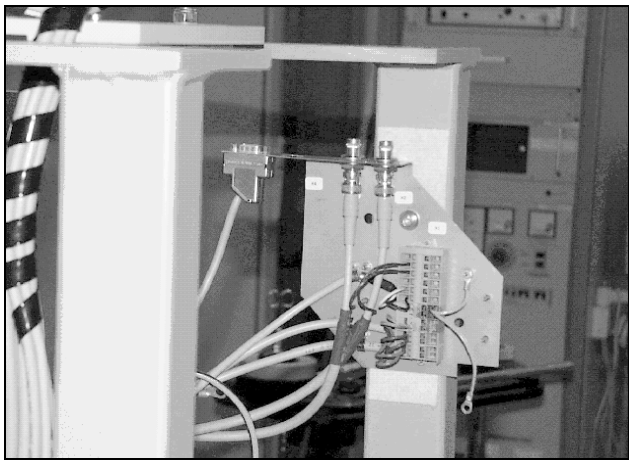


Fig. 32 Monitor suspension system connection plate

- Remove the 4 side pieces and the cover, if present.
- Remove the 4 locking nuts that attach the monitor suspension system on the upper side of the flange; see the arrows in Fig. 31.
- Remove the support tape on the monitor support area.
- Remove the two attachment screws, which will be used later for attachment to the flange (see Fig. 32), and let the connection plate hang down.
- Screw 8 M16 nuts onto the threaded rods in the pre-installation kit until they are just ahead of the existing nuts.
- Use adhesive tape to securely attach the washers and insulating bushings to the nuts.
- Position the system under the sub-ceiling on the pallet as outlined in the planning guide.

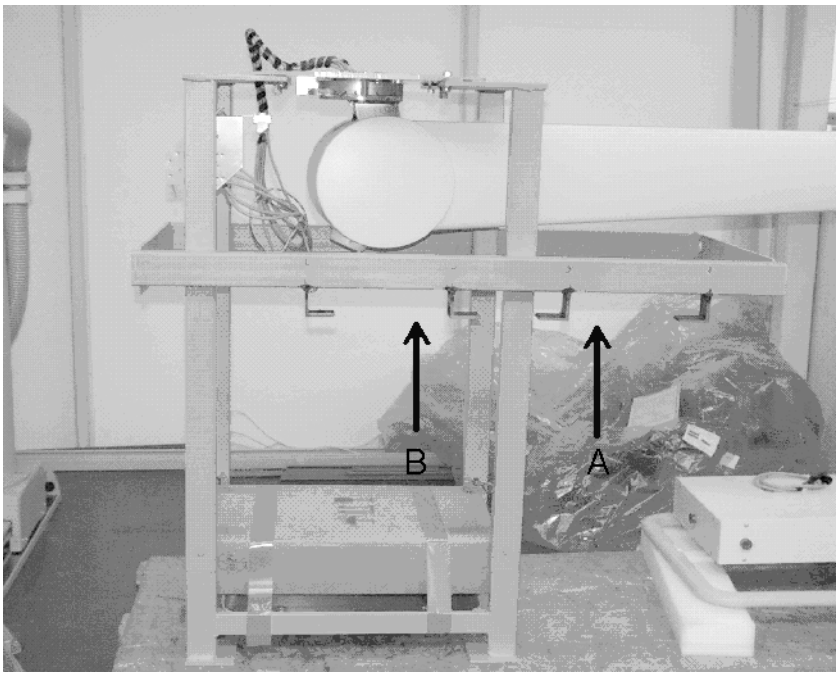



Fig. 33 Monitor suspension system stand holder

- Bring the lifting device next to the stand as appropriate for the weight distribution when lifting the pallet; see arrow **A** in Fig. 33.
- Raise the pallet slightly and loose the rack from the pallet.
- Use the lifting device to raise the rack with the monitor suspension system until the flange is close to, but not touching, the U washers on the threaded rods in the sub-ceiling.
- The lower edge of the monitor suspension system flange must be somewhat higher than the lower edge of the intermediate ceiling.
- Remove the tape from the U washers.
- Loosen the 8 nuts until the flange is horizontal and the lower edge of the flange is at the same height as the lower edge of the intermediate ceiling.
- Use the 8 nuts, collars, and insulating washers to attach the flange.
- The lifting device must be aligned with the rack in order to remove it; see arrow **B** in Fig. 33.
- Remove the rack holders on the stand flange for transport.
- Lower the rack and remove it.
- Use the spirit level to level the flange..
- Tighten the 8 nuts to a torque of 70 Nm.
- Use the two attachment screws to install the electrical connection plate on top of the flange.

### Transport bracket

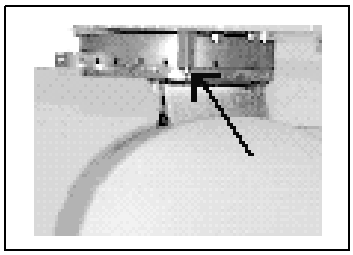


Fig. 34 Transport bracket

- Remove the transport bracket from the flange; see Fig. 34.

### System rotation end stops

- Remove the support arm cover.

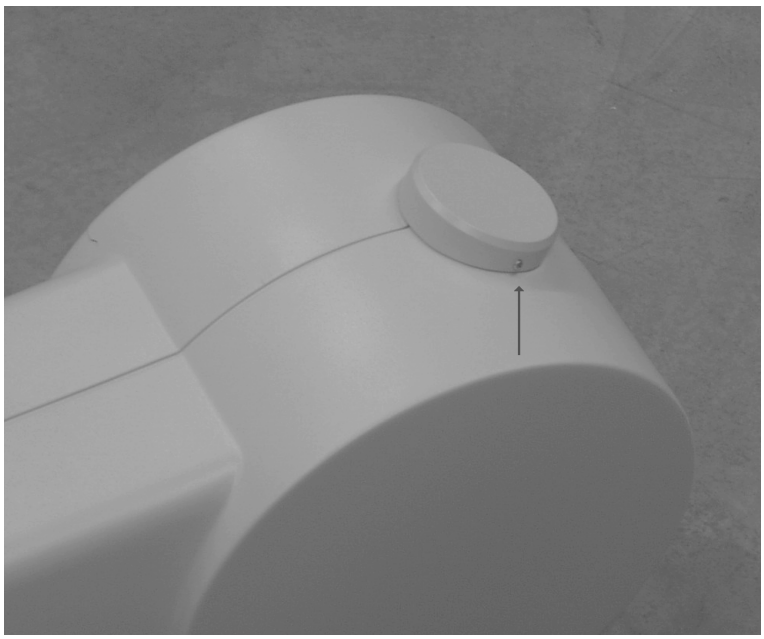


Fig. 35 MTS-Cover1-2

- Remove the screw fastening of the cover halves on the upper joint of the cover, see arrow Fig. 35.
- Loosen the remaining cover screws and remove the two cover halves to the side.
- After taking the necessary action install the covers again in the reverse order.

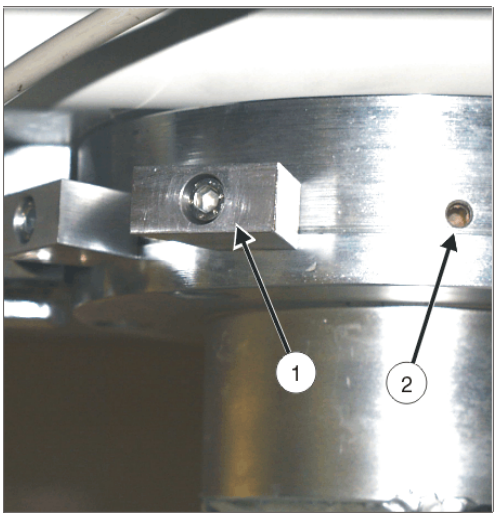



Fig. 36 Articulated arm1, monitor suspension system

- To adjust the system rotation on the stand, reposition the end stop; see Fig. 36.
- There are numerous attachment drillings on the rotating flange.
- Remove the end stop (point 1) and securely fasten it in the desired position (point 2); see Fig. 36.

| NOTE | **System rotation on the stand is a maximum of 300° ± 10°.**<br>**The rotations must be stopped by mechanical end stops.** |
|---|---|

- In order to obtain maximum rotation, one of the two end stops can be removed.

### Installing the monitors

- A connection cable (TV cable) is included in the delivery volume for cabling the external monitors. The cable must be routed from the monitor trolley to the wall outlet; see also cable harness number 17 in Chapter 3, Fixed Point List.
- Cable routing is described in Chapter 2, under "Installation of TV cable for external monitors outside the monitor trolley."
- If the monitors are removed from the monitor trolley, the holes must be filled with the appropriate plugs.
- The monitor support arm must be locked for installing the monitors.

**⚠CAUTION**

**Locking the support arm is absolutely necessary!**

**In the case of non-compliance there is a risk of injury!**

**Two persons are absolutely necessary for this work!**

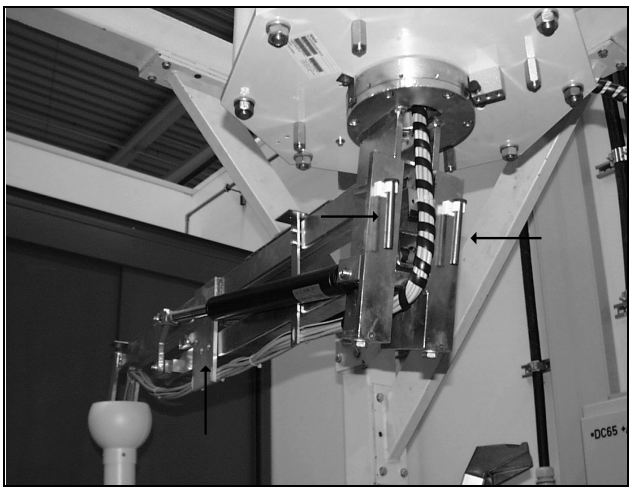


Fig. 37 Locking bolts

Fig. 38 Lock 1

- There are two bolts (see Fig. 37), 3 holes in the locking plate, and a number of clearance holes in the beam of the support arm for locking the support arm.
- One bolt is required to lock the monitor support in the lowest position.
- Bring the monitor support into the lowest position and hold it there.
- In the lowest position, insert the bolt through a hole in the locking plate and into the hole; see Fig. 38.

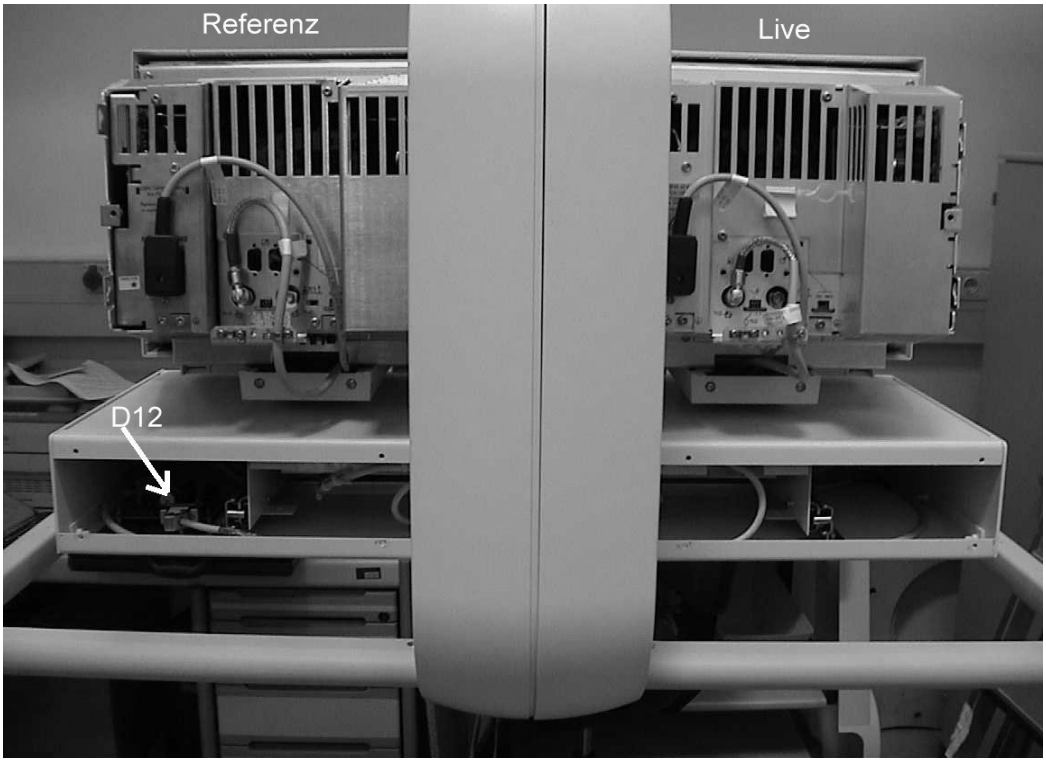



Fig. 39 Monitor suspension system

- Remove the console cover on the back; see Fig. 39.
- Disconnect the cables from the radiation indicator lamps in the cover.
- Install the monitor feet on the console.
- Unpack the monitors.
- Remove the two attachment screws from the back of the monitor and remove the monitor hood by pushing it back.
- Install the two monitors on the consoles.
- Set the "LIVE" monitor on the left side of the console; see Fig. 39.
- Insert the power cables and video cables.
- Clamp the video cable shielding under the cable clamps. Verify that the contact is good between the shielding and the housing and that they are firmly positioned; see Fig. 39.

### Installing the keyboard, if present

- Install board D12 for the keyboard on the pre-installed plate on the left back side next to the drawer, so that plug connection X2 (connection from stand) is located in the back see Fig. 39 and plug X1 (keyboard connection) is at the front.
- Place the supplied long insulating sleeves (included) on the bolts, then connect board D12 and attach it with the supplied insulating washers and M3 nuts.
- Connect the cable with plug D12.X2.

Fig. 40 Keyboard monitor suspension system

- Pull out the keyboard drawer and remove the lower cover plate.
- Place the keyboard gasket into the recess.
- Attach the keyboard from beneath using washers and nuts; see Fig. 40.
- Connect keyboard plug to board D12.X1.
- Secure the cables with cable ties; see Fig. 40. Ensure that the cable loop in the back of the drawer cannot be twisted or jammed when the drawer is opened and closed.
- Reinstall the lower cover plate.
- Reinstall the monitor covers.

### Adjusting the counterbalance

- Remove the cover from the support arm.

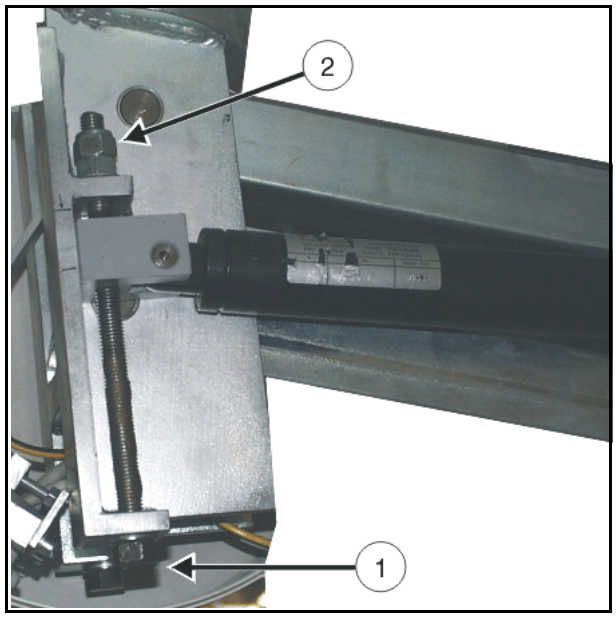



Fig. 41 Support arm- monitor suspension system

- Do not loosen the nuts and lock nut; see Fig. 41, point 2.
- The pneumatic springs can be adjusted only at the lower end; see Fig. 41, point 1.

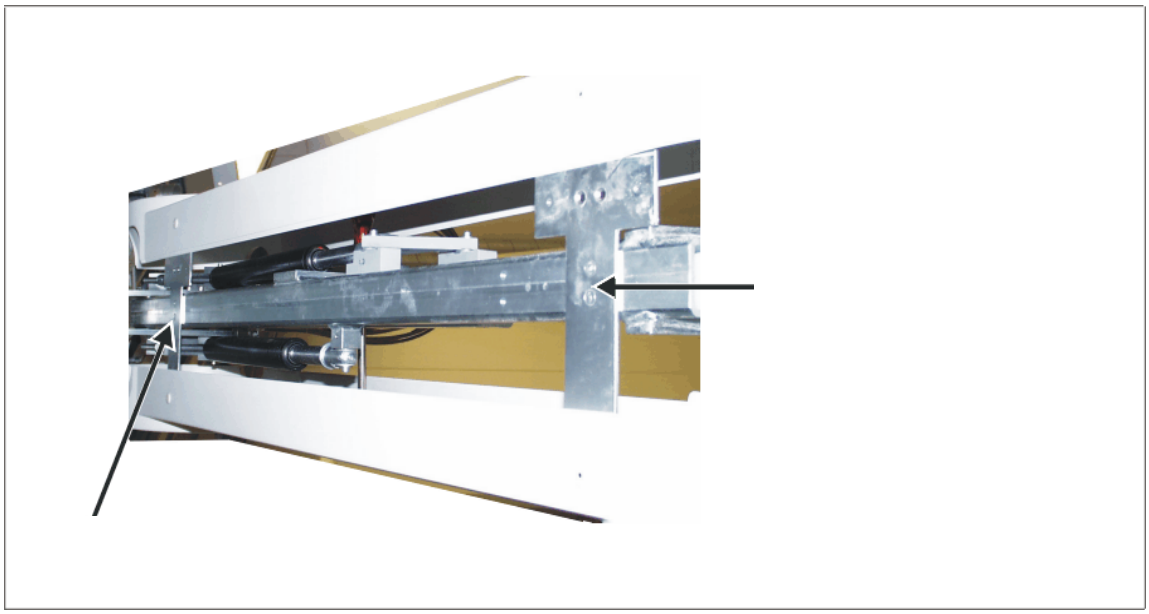


Fig. 42 Support arm plates- monitor suspension system

- The attachment boards for the support arm covers must be attached perpendicularly at the same location in order to temporarily attach the support arm cover; see Fig. 42.

- All covers must be taken into account when making fine adjustments.
- Place the support arm in its horizontal position when making fine adjustments.
- Make fine adjustments to the pneumatic spring with ball joint in 1 mm increments.
  - Adjustment carriage down ---> monitor is raised.
  - Pneumatic spring with attachment hook should be adjusted proportionately as required.
- The height adjustment must be easier to adjust upwards than downwards.
- The monitors must remain securely in position over the entire adjustment range.
- Reattach the attachment boards for the support arm cover in their original position.

### Rotating end stop - monitor rotation

- Remove the ball cover.

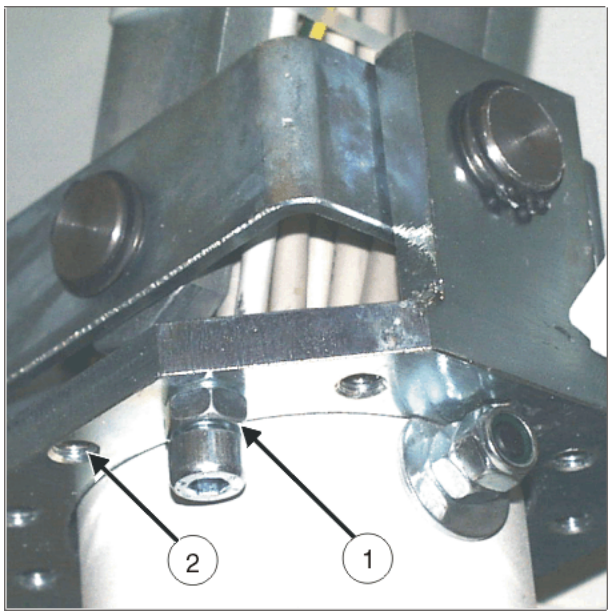



Fig. 43 Articulated arm 2-monitor suspension system

- To adjust the rotation range for the monitor, reposition the end stop; see Fig. 43.
- There are numerous attachment drillings on the rotating flange.
- Remove the end stop (point 1) and secure it in the desired position (point 2); see Fig. 43.

**NOTE**

**Monitor support rotation is a maximum of 330° ± 10°.**

**The stop must be positioned in such a way that the cable cannot be crushed at the rotating flange during monitor rotation.**

**Rotation must be stopped with mechanical end stops.**

### Final work on the monitor suspension system

Attach all covers to the monitor suspension system.

- The monitors must remain securely in position at the desired height over the entire travel range.

## Installing additional keyboard, if present

- Place and install the keyboard in the desired location.
- Connection is described in the "Component Wiring" chapter under "Wiring of external keyboard, if present."
- When connecting the cables, record the colors or codings of the wires in the lists.

## Installing additional monitor wall console(s), if present

- Install the wall consoles using the anchors and attachment screws in the appropriate areas.
- Install the monitors in the center of the swivel consoles.
- Refer to the "Component wiring" chapter for an outline of the connection; see the section entitled "Cabling external monitors, if present."
- When connecting the cables, record the colors or codings of the wires in the lists.

## Installing external radiation ON indicator, if present

- The connection line from the E-box should be routed to an on-site 24 volt relay with a maximum 4 watt output coil. This relay connects a lamp or power relay; see cable harness number 20.
  For example:
  - A radiation warning display "RADIATION ON" is installed above the entrance of the examination room with a power supply of 230 volts.
- For further information, refer to chapter 4 "Component cabling," section "Wiring-external radiation displays, if present."
- When connecting the cables in the E-box, record the colors or codings of the wires in the lists.

**NOTE**

**Because the 24 volts in the E-box is suited only for a maximum of 4 watts, a 24 volt relay with less power must be provided on-site. The contacts of this relay must be set up for the voltage and power of the lamp, or must trigger a power relay. The on-site cabling and wiring of the relay and the lamp should be performed by authorized personnel.**

## Articulated arm settings

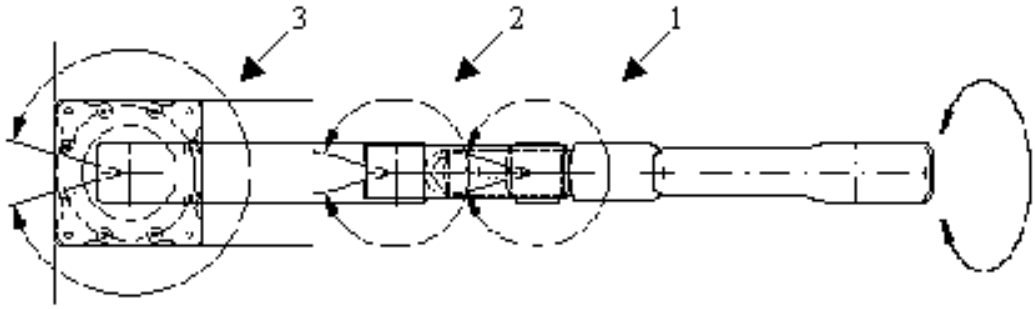



Fig. 44 System view

- Set the end stops in the articulated arm 3 Fig. 44 to ensure that the upper support arm can be placed in park position without touching the wall.
- The maximum rotational angles of the articulated arm 1 and 2 Fig. 44 are set according to customer requirements.

Fig. 45 Arm 3

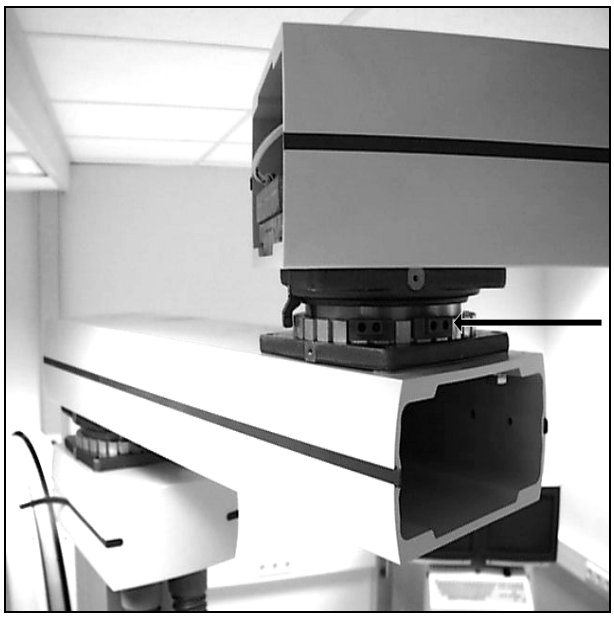


Fig. 46 Arm 2

- Remove the covers from the articulated arms.
- Remove the screws of the stoppers from the uppermost arm; see Fig. 45.
- For the lower arms, simply loosen the pin screws in order to pull up the stopper; see Fig. 46.
- Install the covers of the rotating arms.

## Prerequisites for installation

| NOTE | **Installation is required only when the external keyboard or monitors will be attached to the monitor trolley.** |
|---|---|

### Preparatory work on the monitor trolley

- Open the back cover of the monitor trolley.
- Unscrew both monitor covers.

## Installing the MS power supply for the external keyboard

### Removing the memory

- Pull out the power plug.
- Disconnect the composite video signal and control cables.
- After loosening the 4 bottom attachment screws, pull out the memory from the monitor trolley.

### Mechanical installation of the MS power supply

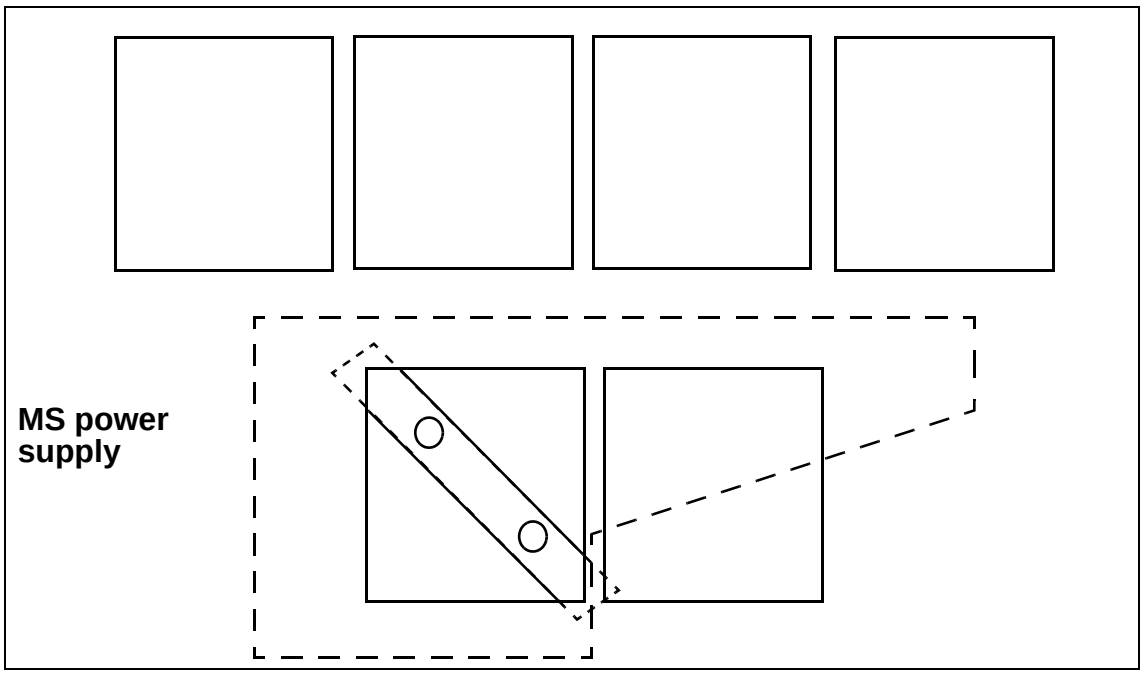



Fig. 1

- Attach the MS power supply from the bottom to the metal using the bracket, see Fig. 1.

### Electrical connection of the MS power supply

- Connect the plug of the installed keyboard to D11 X4.
- Route flat band cable X3 to board D11to the installation site of the memory.
- Route the line voltage cable to board D50 and connect lines D50 X3.3 and D50 X3.2.
- Connect plug D11.X2 to board D11.X2 and secure.
- Connect the protective conductor.

### Installing the memory

- Insert the memory in the monitor trolley and tighten with the bottom attachment screws.
- Connect the BAS and control cable.
- Plug flat band cable X3 from board D11 into the keyboard socket and tighten the screws.
- Connect the line voltage plug.

## Installing the TV cable for external monitors not on the monitor trolley

- Pull the TV cable inside the monitor trolley and attach with the new cable clamp.
- The logbook compartment is located on the back of the monitor trolley under the monitors.
- Open the logbook compartment (loosen 2 screws) and remove the logbook.

**NOTE** **The electrical connection should then be performed as described in paragraph A or B.**

### A. If external monitors and monitors are on the monitor trolley

- Run the two TV cables with the BNC plugs of the TV cable along the supplied cable harness to the TV monitors and connect these to the BAS outlets of the live monitor (left) and reference monitor (right).
- Attach the outer shields of the tri-axial cables to the monitor housing with the cable clamps.
- Secure the cables with cable ties.
- Switch off the 75 ohm terminating resistors at both monitors.
- Reattach both trolley monitor covers.

### B. If external monitors are available, but no monitors are on the monitor trolley

- Run the two video cables with the BNC plugs of the TV cable along cable harness to the memory and connect these to output OUT 1 for the live monitor (wall socket connection X3) and OUT 2 for the reference monitor (wall socket connection X4).

### Attaching the new TV cable

- Route the TV cable along the existing cable harness and attach with cable ties.
- Insert the TV cable plug into outlet and tighten the screws.
- Reattach the back cover of the monitor trolley.

## Installing options on the monitor trolley

- Installation of options (e.g., video printer, video recorder, laser camera, etc.) is done at the factory.

- Use the delivery list to check the installation options.

## Wiring the TV cable

- Installing the plug connections.

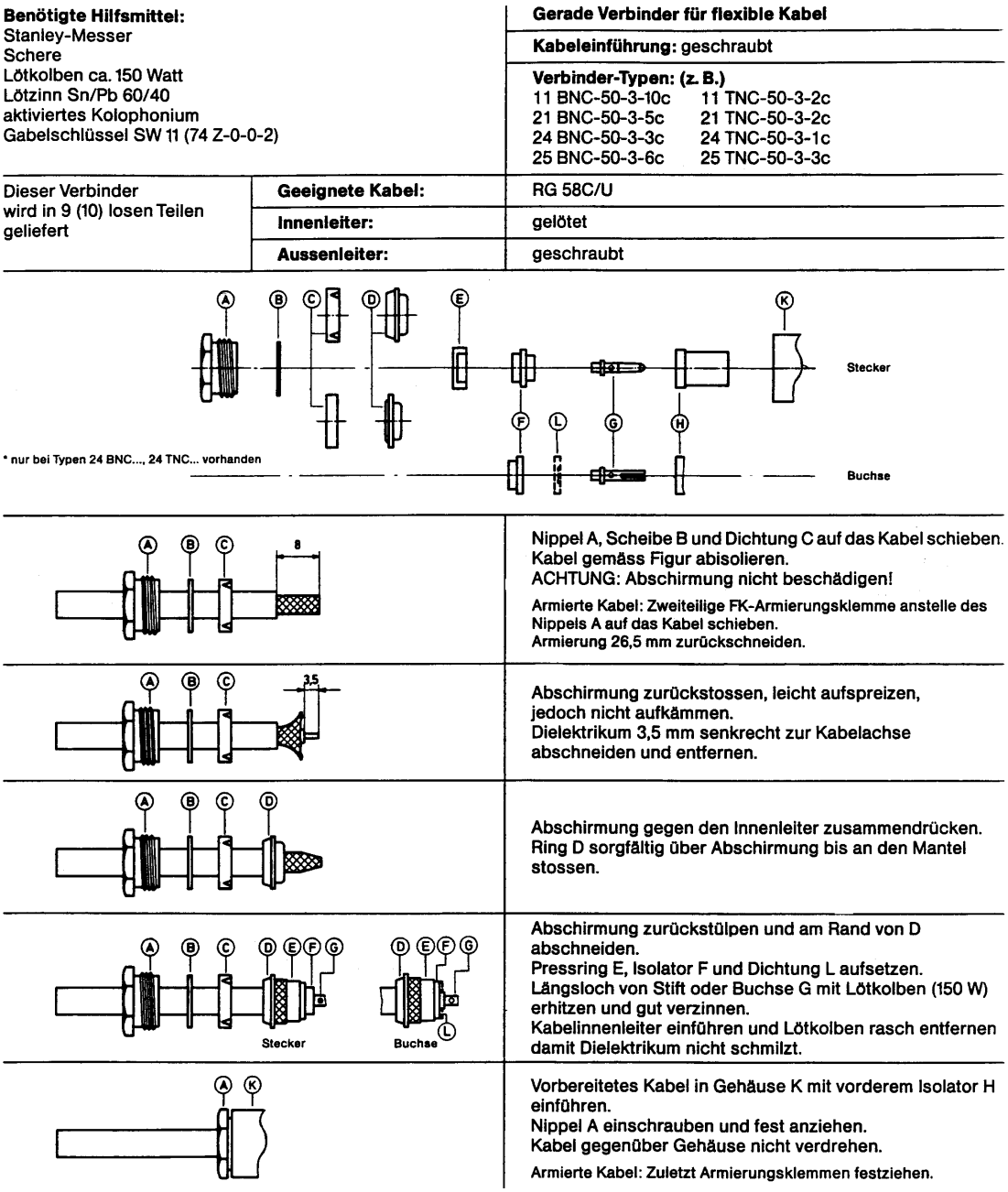

Benötigte Hilfsmittel:
Stanley-Messer
Schere
Lötkolben ca. 150 Watt
Lötzinn Sn/Pb 60/40
aktiviertes Kolophonium
Gabelschlüssel SW 11 (74 Z-0-0-2)
Gerade Verbinder für flexible Kabel
Kabeleinführung: geschraubt
Verbinder-Typen: (z. B.)
11 BNC-50-3-10c 11 TNC-50-3-2c
21 BNC-50-3-5c 21 TNC-50-3-2c
24 BNC-50-3-3c 24 TNC-50-3-1c
25 BNC-50-3-6c 25 TNC-50-3-3c
Dieser Verbinder wird in 9 (10) losen Teilen geliefert
Geeignete Kabel: RG 58C/U
Innenleiter: gelötet
Aussenleiter: geschraubt
Stecker
Buchse
* nur bei Typen 24 BNC..., 24 TNC... vorhanden
8
Nippel A, Scheibe B und Dichtung C auf das Kabel schieben.
Kabel gemäss Figur abisolieren.
ACHTUNG: Abschirmung nicht beschädigen!
Armierte Kabel: Zweiteilige FK-Armierungsklemme anstelle des Nippels A auf das Kabel schieben.
Armierung 26,5 mm zurückschneiden.
3,5
Abschirmung zurückstossen, leicht aufspreizen, jedoch nicht aufkämmen.
Dielektrikum 3,5 mm senkrecht zur Kabelachse abschneiden und entfernen.
Abschirmung gegen den Innenleiter zusammendrücken.
Ring D sorgfältig über Abschirmung bis an den Mantel stossen.
Stecker
Buchse
Abschirmung zurückstülpen und am Rand von D abschneiden.
Pressring E, Isolator F und Dichtung L aufsetzen.
Längsloch von Stift oder Buchse G mit Lötkolben (150 W) erhitzen und gut verzinnen.
Kabelinnenleiter einführen und Lötkolben rasch entfernen damit Dielektrikum nicht schmilzt.
Vorbereitetes Kabel in Gehäuse K mit vorderem Isolator H einführen.
Nippel A einschrauben und fest anziehen.
Kabel gegenüber Gehäuse nicht verdrehen.
Armierte Kabel: Zuletzt Armierungsklemmen festziehen.

Fig. 2 Installation of BNC/TNC plug

## Fixed point overview

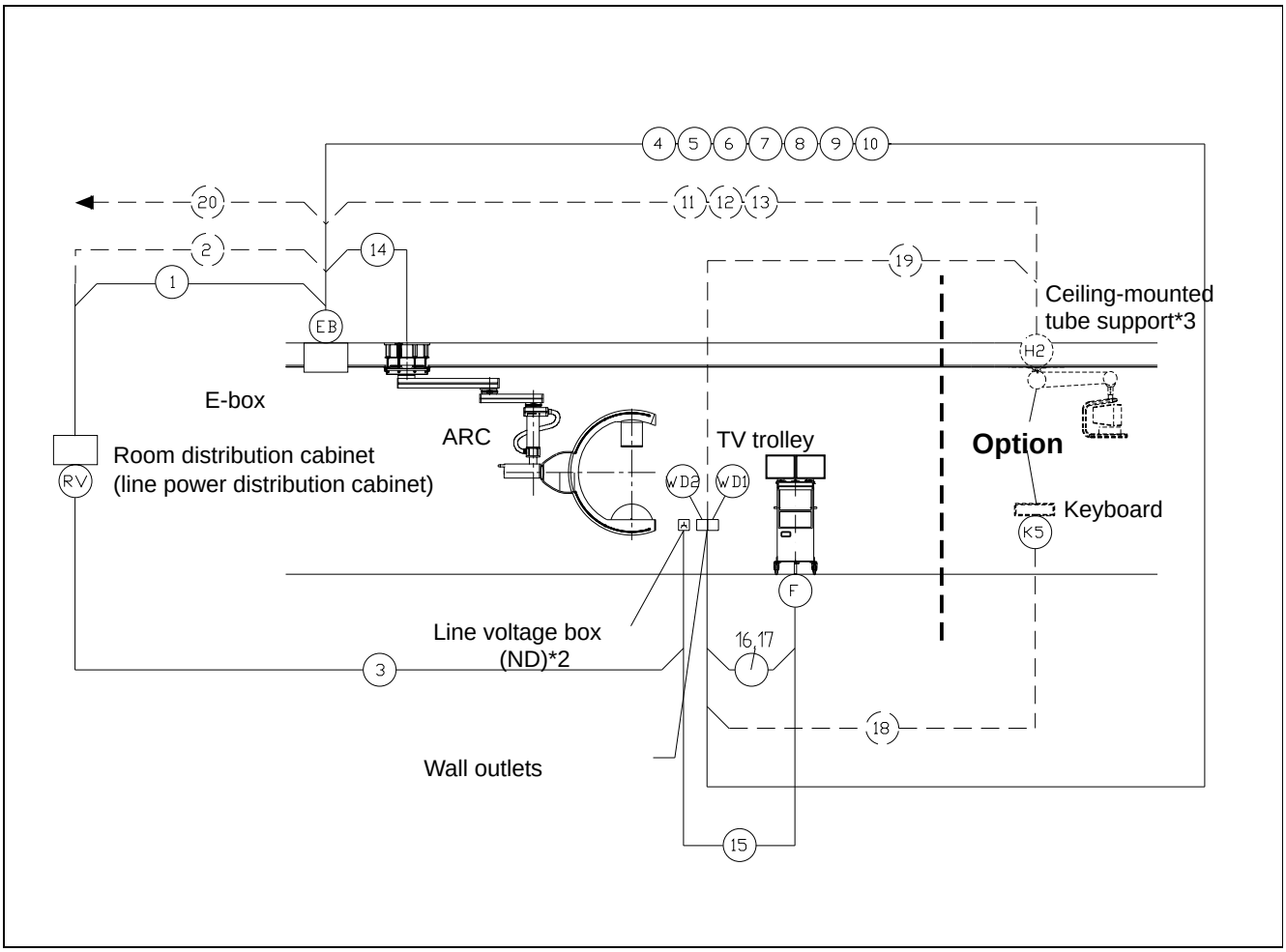



Fig. 1 S_4-02

- All cables set on-site cannot exceed the maximum length (see Fixed Point List) Fig. 1.

***2)** Refer to electrical data (PG).

***3)** Additional monitors can also be installed on the mobile consoles (option).
Connection via wall socket and E-box identical to that of ceiling-mounted tube support.

## Fixed point list

| Cable harness No. | From fixed point | To fixed point | Cable duct diagonal in $mm^2$ | Tube, light distance in inches | Minimum outlet in mm | Maximum fixed point distance in m | Comment |
|---|---|---|---|---|---|---|---|
| 1 | RV | EB | 30 | 1/2 | Ø 10 | — | PE 16 $mm^2$<br>Protective conductor<br>**(on-site)** |
| 2 | RV | EB | 125 | 3/4 | Ø 20 | — | NK 3 x 1.5 $mm^2$ ***3**<br>Line voltage **(on-site)** |
| 3 | RV | ND | — | — | — | — | Power connection ***2**<br>**(on-site)** |
| 4 | EB | WD1 | 30 | 1/2 | Ø 10 | 12 | PE 6 $mm^2$ ***4**<br>PE Wall socket<br>Item no. 15 88 651 |
| 5 | EB | WD1 | 180 | 3/4 | Ø 20 | 12 | NK 3 x 4 $mm^2$ ***4**<br>Line voltage generator<br>Item no. 34 62 728 |
| 6 | EB | WD1 | 30 | 1/2 | Ø 10 | 12 | NK 3 x 1.5 $mm^2$ ***4**<br>Line voltage supply<br>Item no. 20 27 910 |
| 7 | EB | WD1 | 100 | 3/4 | Ø 20 | 12 | NK 4 x $0.75^2$ ***4**<br>System on/off<br>Item no. 20 27 431 |
| 8 | EB | WD1 | 55 | 1/2 | Ø 10 | 12 | 4 x (2 x 0.14 $mm^2$) ***4**<br>Control cable, shielded<br>Item no. 34 51 077 |
| 9 | EB | WD1 | 80 | 3/4 | Ø 20 | 12 | NK 2 x 0.75 $mm^2$ ***4**<br>Radiation display<br>Item no. 20 27 746 |
| 10 | EB | WD1 | 70 | 3/4 | Ø 20 | 12 | Triax Ø 7.5 mm, ***4**<br>BAS signal for camera<br>Item no. 15 86 796 |
| 11 | EB | H2 | 30 | 1/2 | Ø 10 | 18 | PE 6 $mm^2$ ***3, *4**<br>PE SG block |
| 12 | EB | H2 | 80 | 3/4 | Ø 20 | 18 | 2 x 0.75 $mm^2$ ***3, *4**<br>SG block radiation display |
| 13 | EB | H2 | 125 | 3/4 | Ø 20 | 18 | NK 3 x 1.5 $mm^2$ ***3, *4**<br>SG block |
| 14 | EB | ARC | — | — | — | — | Pre-install. cable<br>(manufactured) |
| 15 | ND | F | — | — | — | 7 | Power cable ***1**<br>(SG trolley) |
| 16 | WD1 | F | — | — | — | 7 | SG cable ***1**<br>(SG trolley) |

| Cable harness No. | From fixed point | To fixed point | Cable duct diagonal in $mm^2$ | Tube, light distance in inches | Minimum outlet in mm | Maximum fixed point distance in m | Comment |
|---|---|---|---|---|---|---|---|
| 17 | WD1 | F | — | — | — | 4 | TV cable ***1, *3** (SG trolley) |
| 18 | WD2 | K5 | 55 | 1/2 | Ø 10 | 18 | 4 x (2 x 0.16 $mm^2$) ***3** Control cable |
| 19 | WD2 | H2 | 2 x 70 | 3/4 | Ø 20 | 18 | 2 x Triax Ø 7.5 mm 75 Ohm *3**, *4** |
| 20 | EB | Relay 24 V- | 125 | 3/4 | Ø 20 | - | 2 x Ø 1.5 mm Control cable, on-site for ext. lamps, e.g., above entrance door to OR |

***1** Included in the delivery volume

***2** Refer to electrical data

***3** Option

***4** ARCOSKOP pre-installation component

**NOTE** **All lines in flexible layout**

## List of fixed points used

| Fixed point | Sub-system | Comment |
|---|---|---|
| ARC | ARCOSKOP | fixed point - ceiling |
| EB | E-box | fixed point - ceiling |
| F | TV trolley | fixed point - floor |
| H2 | Ceiling-mounted support | fixed point - ceiling |
| K5 | Keyboard | fixed point - wall or ceiling |
| RV | Room distribution cabinet (line power distribution cabinet) | fixed point - wall |
| ND | Line voltage box | fixed point - wall |
| WD | Wall socket | fixed point - wall |

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## Wiring the E-box

**NOTE**

- **The installation instructions should be used to route and clamp the electric cables in the E-box.**
- **The color or code of the individual wires must be clearly entered in table A and B under the "Wire color / code" column. This is necessary for both the installation and service.**
- **We have included several figures (labeled Fig. B through Fig. D) that are intended to facilitate orientation and wiring. The figures display the wiring symbols inside the E-box, and the chronological order of the figures should make the comprehensive wiring easier.**

**Prerequisite**

- All cables have been fed into the E-box through the side cable inlet.
- The electrolytic capacitor buffer has not been installed.

### Cable inlet plate

- Fig. 1 shows the inlet plate from the inside of the E-box.
- Feed all cables through the 5 cable bushings on the cable inlet plate as outlined in Fig. 1 and Table A. The cables are numbered accordingly in Table A in the "**Cable no. in Fig. 1**" column.

✍
- Attach cable 13a and 13b with cable ties to ensure that the shield is attached firmly and has good contact with the second cable clamp, A/ Fig. 1.

- Feed all the other cables through, but do not fasten them yet.
  - Do not attach the cables to the cable inlet plate until they have been routed and connected to the cable clamps.

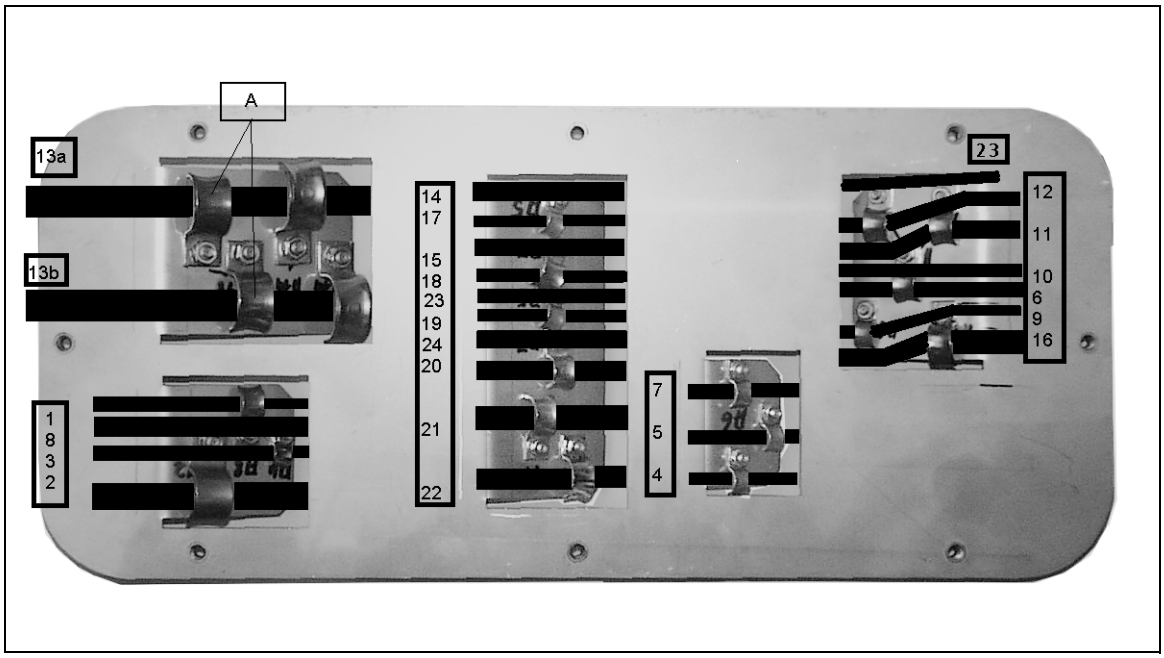



Fig. 1 Cable plate with cables

- Feed the cable inlet plate 1/Fig. 2 through the cable outlet 2/Fig. 2 to the outside and attach it to the E-box using the screws and safety washers supplied, see Fig. 2.

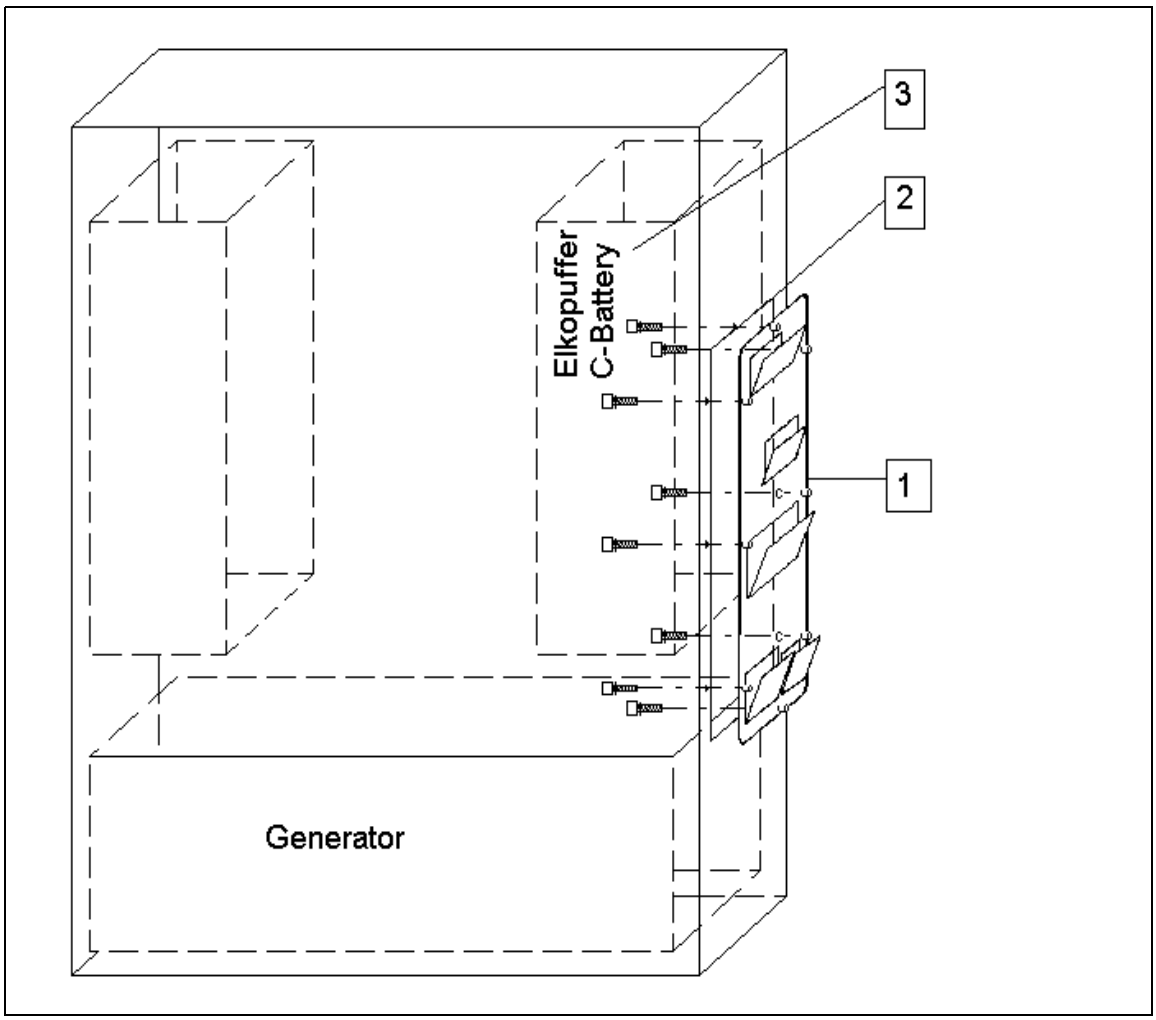



Fig. 2 Installation of the cable plate

## Table A

| Cable harness no. in fixed point list | **Cable no. in Fig. 1** | Type of cable / Application | Fixed point from | **Connection** | **Wire color/ coding** | Fixed point to: | **Connection** |
|---|---|---|---|---|---|---|---|
| 4 | **1** | PE 6 mm² | WD 1 | Protective conductor | ..... | EB/M18 | Protective conductor |
| 5 | **2** | NK 3x4 mm²<br>Line connection Generator | WD 1 | Terminal block X1:<br>X1.1<br>X1.2<br>Protective conductor | .....<br>.....<br>..... | EB/M18 | Terminal block X2:<br>X2.3<br>X2.4<br>Protective conductor |
| 6 | **3** | NK 3x1.5 mm²<br>Line connection System | WD 1 | Terminal block X1:<br>X1.20<br>X1.19<br>Protective conductor | .....<br>.....<br>..... | EB/M18 | Terminal block X2:<br>X2.2<br>X2.1<br>Protective conductor |
| 7 | **4** | NK 4x0.75 mm²<br>System on/off | WD 1 | Terminal block X1:<br>X1.6<br>X1.7<br>X1.25<br>X1.26 | .....<br>.....<br>.....<br>..... | EB/M18 | Terminal block X1:<br>X1.3<br>X1.4<br>X1.5<br>X1.6 |
| 8 | **5** | 4x(2x0,16 mm²)<br>Control connection is shielded, connect wires in pairs | WD 1 | Terminal block X1:<br>X1.9<br>X1.10<br>***X1.11***<br>***X1.12***<br>X1.13<br>X1.14<br>***X1.15***<br>***X1.16***<br>X1.17<br>X1.18 | .....<br>.....<br>.....<br>.....<br>Shield<br>n.a.<br>.....<br>.....<br>.....<br>..... | EB/M18 | Terminal block X1:<br>X1.7<br>X1.8<br>***X1.9***<br>***X1.10***<br>X1.11<br>n.a.<br>***X1.12***<br>***X1.13***<br>X1.14<br>X1.15 |
| 9 | **6**<br>***4** | NK 2x0.75 mm²<br>Radiation display | WD 1 | Terminal block X1:<br>X1.4<br>X1.5 | .....<br>..... | EB/M18 | Terminal block X1:<br>X1.1<br>X1.2 |
| 10 | **7** | Triax 75 Ohm<br>BAS signal camera | WD 1 | Clamps<br>X10.A1<br>X10.A2<br>X1.23 | <br>Core<br>inside shield<br>outside shield | EB/M18 | BNC plug X1<br>X1.A1<br>X1.A2<br>X1.18 |
| 1 | **8** | PE 16 mm² | RV | Protective conductor | ..... | EB/M18 | Protective conductor - bolt |
| 2 | **9**<br>***1** | NK 3x1.5 mm²<br>option<br>ext. monitors | RV or 230V~ pre-transformer | N<br>L1<br>Protective conductor | .....<br>.....<br>..... | EB/M18 | Relay K30.1<br>Relay K30.3<br>Protective conductor |
| 11 | **10**<br>***2** | PE 6 mm²<br>option<br>ext. monitors | H2 | Clamp screw (SL)<br>Interface board | ..... | EB/M18 | Protective conductor ( PE ) |

| Cable harness no. in fixed point list | **Cable no. in Fig. 1** | Type of cable / Application | Fixed point from: | **Connection** | **Wire color/ coding** | Fixed point to: | **Connection** |
|---|---|---|---|---|---|---|---|
| 13 | **11** | NK 3x0.75 mm² Option ext. monitors | H2 | Terminal block X1.1 (N) X1.2 (L) X1.3 (SL) | ..... ..... ..... | EB/M18 | Relay K30.2 Relay K30.4 Protective conductor |
| 12 | **12 *4** | NK 2x0.75 mm² Option, Radiation display ext. monitors | H2 | Terminal block X1.5 (0 V) X1.6 (+24 V) | ..... ..... | EB/M18 | Plug contact on the relay, K32.2 K32.4 |
| 14 | **13a** | Cable module ARCOSKOP C-arm I.I. | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D1.X1 D1.X2 D1.X9 D30.X3 X1 (BNC) Terminal block M18.X1.16 M18.X1.17 |
| 14 | **13b** | Cable module ARCOSKOP C-arm X-ray tube | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D20.X7 D20.X8 D20.X9 D21.X1 D21.X3 D30.X3 D41.X4 M2.X1 |
| 14 | **14** | Cable ARCOSKOP Brakes Articulated arm 1+2 | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug X16 |
| 14 | **15** | Cable ARCOSKOP Brakes Articulated arm 3 | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug X170 to cable no. 22 |
| 14 | **16** | Cable ARCOSKOP Motor Vertical column | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug FU X5.U FU X5.V FU X5.W FU X5.PTC FU X5.-Uzk |
| 14 | **17** | Cable ARCOSKOP Limit switch Vertical column | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D30.X9 |

| Cable harness no. in fixed point list | **Cable no. in Fig. 1** | Type of cable / Application | Fixed point from: | **Connection** | **Wire color/ coding** | Fixed point to: | **Connection** |
|---|---|---|---|---|---|---|---|
| 14 | **18** | Cable ARCOSKOP Serial Interface Service | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D1.X7 |
| 14 | **19** | Cable ARCOSKOP Data signal Console | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D41.X1 |
| 14 | **20** | Cable harness ARCOSKOP Radiation release + release brakes | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D30.X5 D30.X6 D30.X12 |
| 14 | **21** | Cable harness ARCOSKOP Voltage supply D40 | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug M18.X3 |
| 14 | **22** | Cable harness ARCOSKOP Brake control | ARC | All cables have been wired in the stand | n.a. | EB/M18 | Plug D30.X15 D30.X17 + X170 K31.1 K31.2 |
| 20 | **23** ***4** | 2 x 0.75 mm² Voltage supply for external radiation display | ext. relay, e.g., door or control room | on-site connection ***3** **Relay contact** | ..... ..... | EB/M18 | Plug contact on the Terminal block, X1.1 (0V) X1.2 (24V-) |

***1** Refer to Chapter 4 "Setting the line voltage for external monitors" and "Wiring the pretransformer".

***2** If external monitors on wall consoles are being used, each monitor must be connected with a 6 mm² protective conductor connection and adapter. Sufficient cable length must also be provided to ensure that the monitors can be moved freely.

***3** The connecting line from the E-box is set to an on-site - 24 volt relay with a maximum 4 watt coil voltage. This relay switches a lamp or a power relay, see cable harness number 20.
For example:

- A display lamp with the notice "RADIATION ON" and a line voltage of 230 volts is located above the entrance to the examination room.

**NOTE**

**Because the - 24 volts in the E-box is only suited for a maximum of 4 watts, a - 24 volt relay with less power must be set up on-site. The contacts of this relay must be set up for the voltage and power of the lamp and trigger a power relay. The on-site cabling and wiring of the relay and the lamp is performed by authorized personnel.**

***4** The size of the terminal contacts in the E-Box M18.X1.1 and M18.X1.2 for the radiation indicators is suitable only for connecting one cable (Table A, cable No. 6). Therefore in the case of additional radiation indicators (options: MTS, external radiation indicator) all cables must be connected with one another before the connection and may be connected only with one cable to the terminal block M18.X1.1 and M18.X1.2.

**Table B**

| Cable harness no. in fixed point list | Type of cable / Application | Fixed point from: | Marking / Connection | Wire color/ coding | Fixed point to: | Connection |
|---|---|---|---|---|---|---|
| 19 ***2** | Triax<br>(Video I)<br>FL monitor | WD2 | X5<br>X2.7 | BNC plug<br>outside shield | H2 | X2<br>X1.8 |
| 19 ***2** | Triax<br>(Video II)<br>Reference | WD2 | X4<br>X2.6 | BNC plug<br>outside shield | H2 | X3<br>X1.9 |
| 18 ***1** | 4 x (2x 0,16)mm²<br>monitor suspension system<br>Keyboard connection | WD2 | External keyboard<br>Plug X2<br>X2.1<br>X2.3<br>X2.2<br>X2.4<br>X2.8 (shield) | .....<br>.....<br>.....<br>.....<br>.....<br>..... | H2 | monitor suspension system stand<br>Plug X5<br>X2.1<br>X2.4<br>X2.3<br>X2.8<br>Shield on housing |
| 18 ***1** | 4 x (2x 0,16)mm²<br>Wall console<br>Keyboard connection | WD2 | External keyboard<br>Plug X2<br>X2.1<br>X2.3<br>X2.2<br>X2.4<br>X2.8 (shield) | .....<br>.....<br>.....<br>.....<br>.....<br>..... | K5 | Keyboard<br>Plug X2<br>X2.1<br>X2.4<br>X2.3<br>X2.8<br>Shield on housing |

***1** connect to the monitor suspension system or the wall socket as per the installation requirements of the external keyboard.

***2** with monitor suspension system, without monitor suspension system when directly connecting to the monitors.

**NOTE**

- **The color or code of the individual wires must be clearly entered in table A and B under the "Wire color / code" column. <u>This is necessary for both the installation and service.</u>**

**Wiring overview for relay K32**

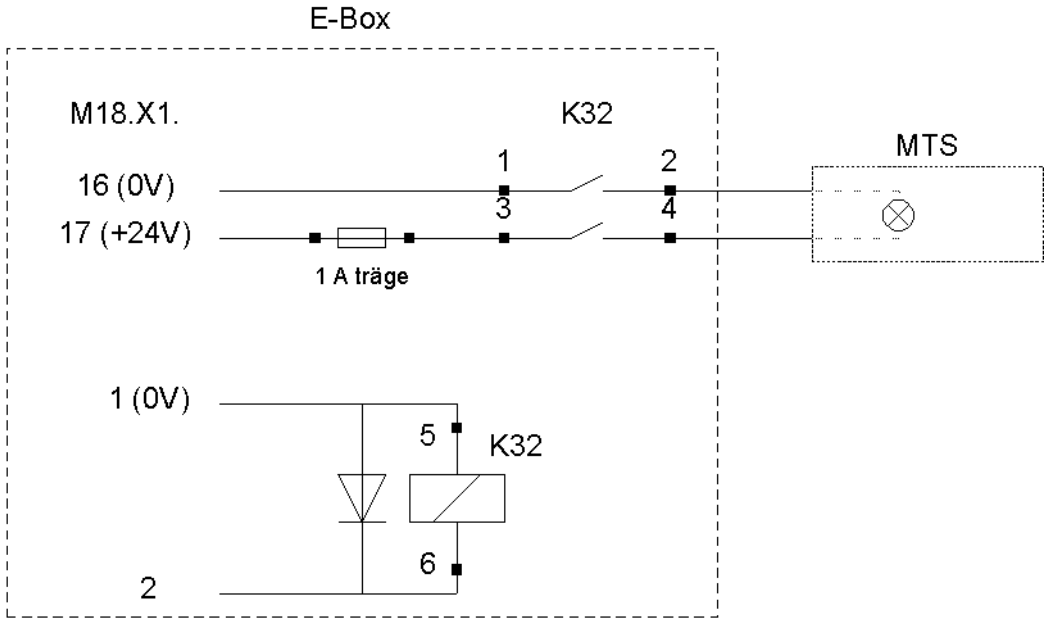



Fig. 3 Relay_K32

- If a monitor suspension system is available, relay K32 must be installed in the E-Box and wired. All required components are included in the supplied installation kit.
- Relay K32 is installed next to terminal block X1 and across from K31 on the other side as shown in Fig. 4. The threaded holes to attach the relay are included.
- The wiring overview, Fig. 3 shows activation of the monitor suspension system. Clamp and route the connection lines from terminal block X1 to relay K32. Clamp the diode in the lock direction.
- Attach the cables using cable clamps.

### Wiring the E-box

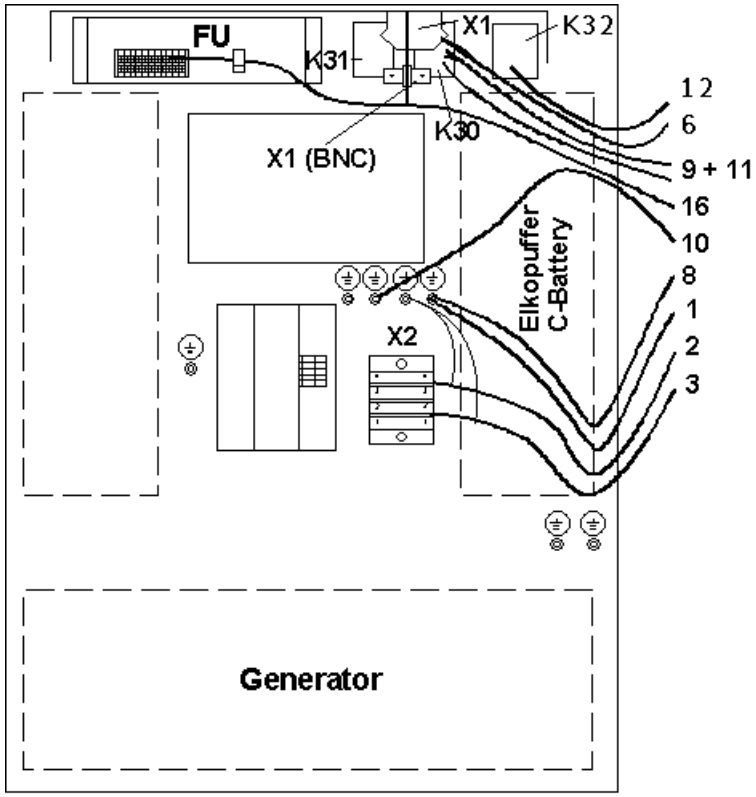



Fig. 4 Cable_2

- Because the cables shown in Fig. 4 will later need to be routed under the electrolytic capacitor buffer, it is important to ensure that the subsequent installation of the electrolytic capacitor buffer will not be hindered.
- Cables 8, 9, 10, 11, and 12 are only supplied if an external monitor or monitor suspension system is available.
- Route cable numbers 1, 8, and 10 in the protective conductor and affix with clamps, see Fig. 4.
- Route cable number 6 to terminal block X1 and affix with clamps as per Table A.
- Route cable numbers 12 to relay K32 and affix as outlined in Table A. Refer to "Wiring overview K32", Fig. 3.
- Route cable numbers 9 and 11 to relay K30 as shown in Fig. 4. Attach a cable lug to the protective conductor and affix it to the protective conductor connections. Attach cable lugs (6.3 mm flat plug) to the other two cable ends and connect as outlined in Table A.
- Route cable number 16 to frequency converter FU as shown in Fig. 4. Tighten the cable shielding using cable clamps. Affix the cable ends according to the marking, also refer to Table A.

- Route cable numbers 2 and 3 to terminal block X2 as shown in Fig. 4. Attach cable lugs to the protective conductor and affix it to the protective conductor connections. Attach crimp lugs to the other cables and affix as outlined in Table A.

**NOTE**

- **The color or code of the individual wires must be clearly entered in table A and B under the "Wire color / code" column. <u>This is necessary for both the installation and service.</u>**

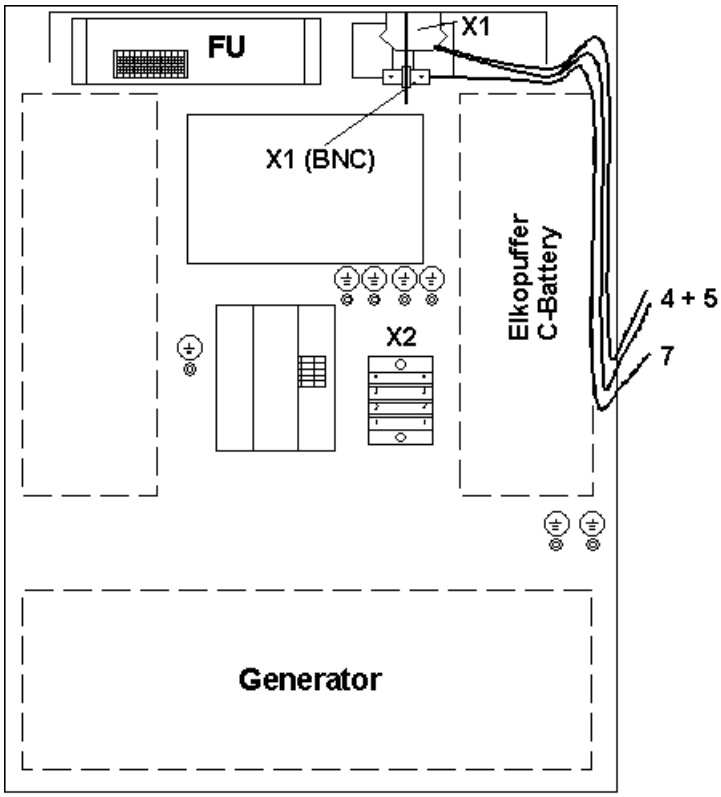



Fig. 5 Cable_3

- Route cable numbers 4 and 5 to terminal block X1 and affix as outlined in Table A.
- Install a BNC plug on cable number (video connection) and connect to BNC plug connection X1. The installation of the BNC plug is outlined in Fig. 6 on the following page.
- Drill the outer shielding of the triaxial cable, lengthen it, and fasten it to terminal block X1 as shown in Table A.

**NOTE**

- **The color or code of the individual wires must be clearly entered in table A and B under the "Wire color / code" column. <u>This is necessary for both the installation and service.</u>**

Wiring the TV cable

- Installing the connector

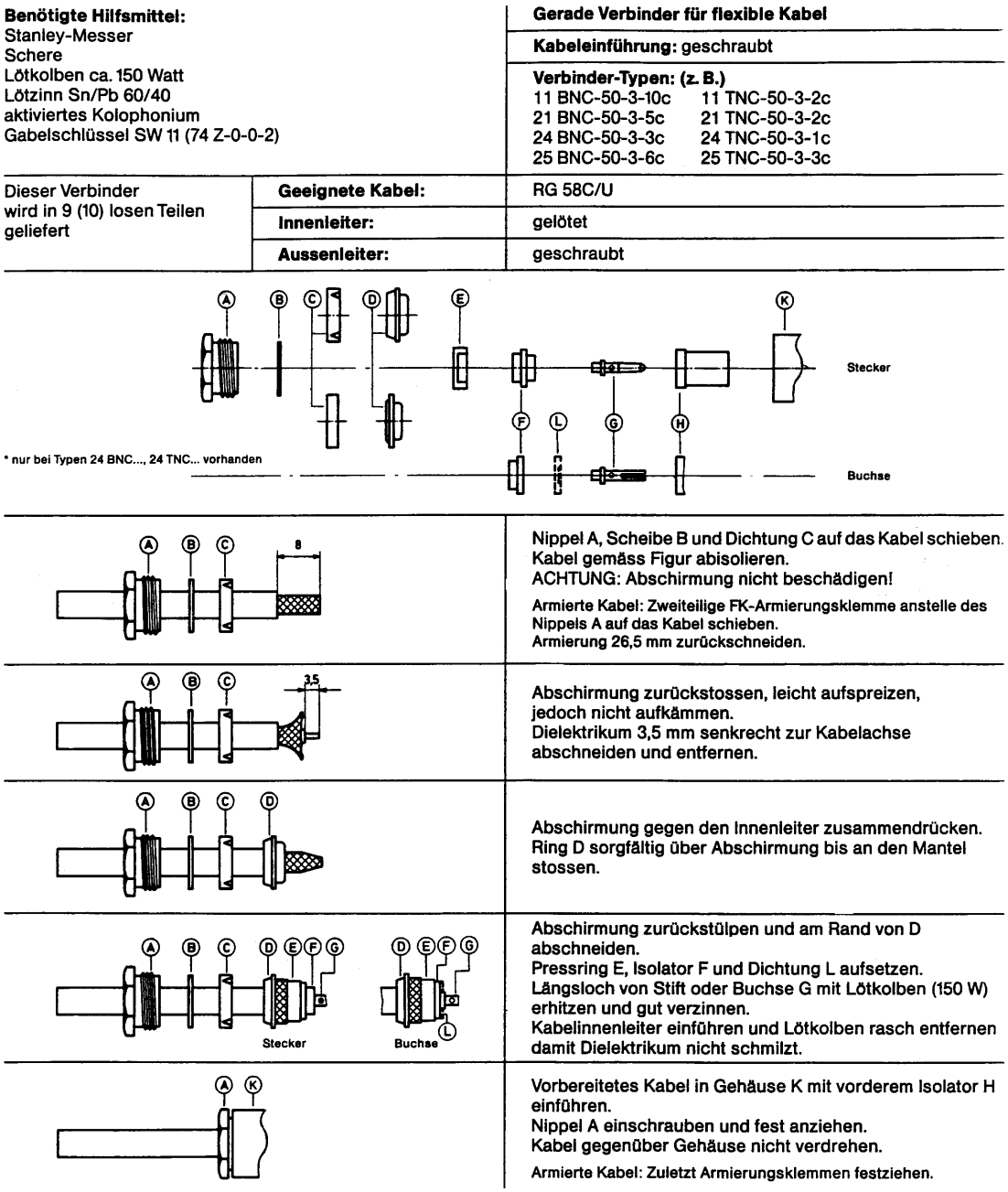

Benötigte Hilfsmittel:
Stanley-Messer
Schere
Lötkolben ca. 150 Watt
Lötzinn Sn/Pb 60/40
aktiviertes Kolophonium
Gabelschlüssel SW 11 (74 Z-0-0-2)
Gerade Verbinder für flexible Kabel
Kabeleinführung: geschraubt
Verbinder-Typen: (z. B.)
11 BNC-50-3-10c 11 TNC-50-3-2c
21 BNC-50-3-5c 21 TNC-50-3-2c
24 BNC-50-3-3c 24 TNC-50-3-1c
25 BNC-50-3-6c 25 TNC-50-3-3c
Dieser Verbinder wird in 9 (10) losen Teilen geliefert
Geeignete Kabel: RG 58C/U
Innenleiter: gelötet
Aussenleiter: geschraubt
Stecker
Buchse
* nur bei Typen 24 BNC..., 24 TNC... vorhanden
Nippel A, Scheibe B und Dichtung C auf das Kabel schieben.
Kabel gemäss Figur abisolieren.
ACHTUNG: Abschirmung nicht beschädigen!
Armierte Kabel: Zweiteilige FK-Armierungsklemme anstelle des Nippels A auf das Kabel schieben.
Armierung 26,5 mm zurückschneiden.
Abschirmung zurückstossen, leicht aufspreizen, jedoch nicht aufkämmen.
Dielektrikum 3,5 mm senkrecht zur Kabelachse abschneiden und entfernen.
Abschirmung gegen den Innenleiter zusammendrücken.
Ring D sorgfältig über Abschirmung bis an den Mantel stossen.
Abschirmung zurückstülpen und am Rand von D abschneiden.
Pressring E, Isolator F und Dichtung L aufsetzen.
Längsloch von Stift oder Buchse G mit Lötkolben (150 W) erhitzen und gut verzinnen.
Kabelinnenleiter einführen und Lötkolben rasch entfernen damit Dielektrikum nicht schmilzt.
Stecker
Buchse
Vorbereitetes Kabel in Gehäuse K mit vorderem Isolator H einführen.
Nippel A einschrauben und fest anziehen.
Kabel gegenüber Gehäuse nicht verdrehen.
Armierte Kabel: Zuletzt Armierungsklemmen festziehen.

Fig. 6 Installation of the BNC/TNC plug

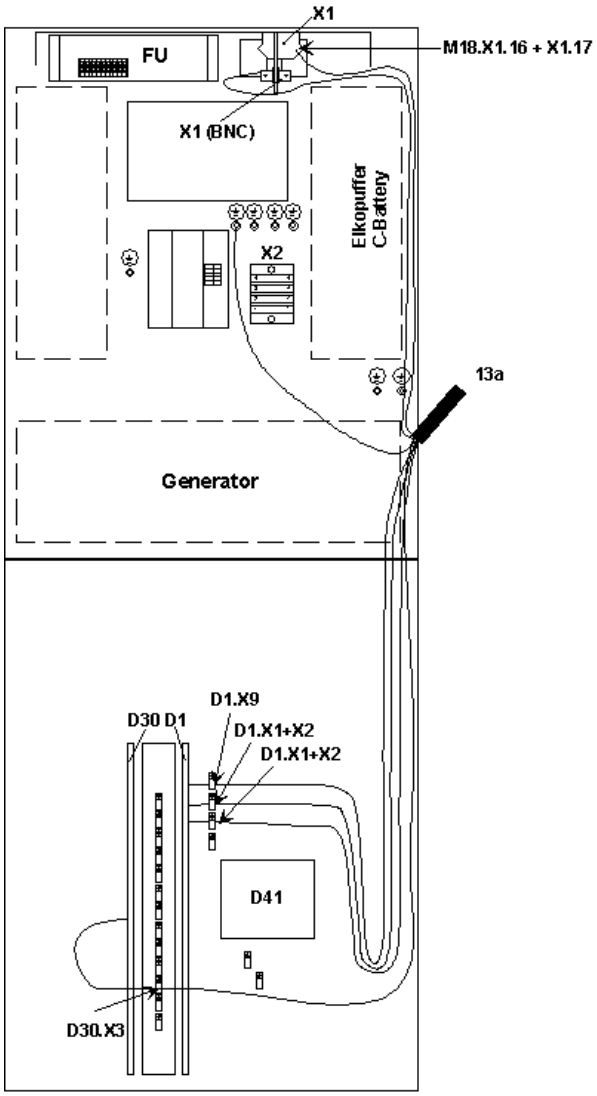



Fig. 7 Cable_4

- Fig. 7 shows the open E-box and the wiring of connection 13a.
- When routing cables in the E-box, ensure that the cover can be opened and closed without crimping or stretching the cables, or loosening the plug connection.
- Route cable 13a of the protective conductor as shown in Fig. 7 and affix.
- Route the triaxial cable (video) with attached BNC to plug connection X1 and then affix. Attach the outer shielding of the triaxial cable to M18.X1.18.
- Route the other cables with their plugs as shown in Fig. 7 and fasten the shields using the cable clamps. Ensure a good connection between the shielding and the ground.
- Connect the plugs to boards D1 and D30 as marked.

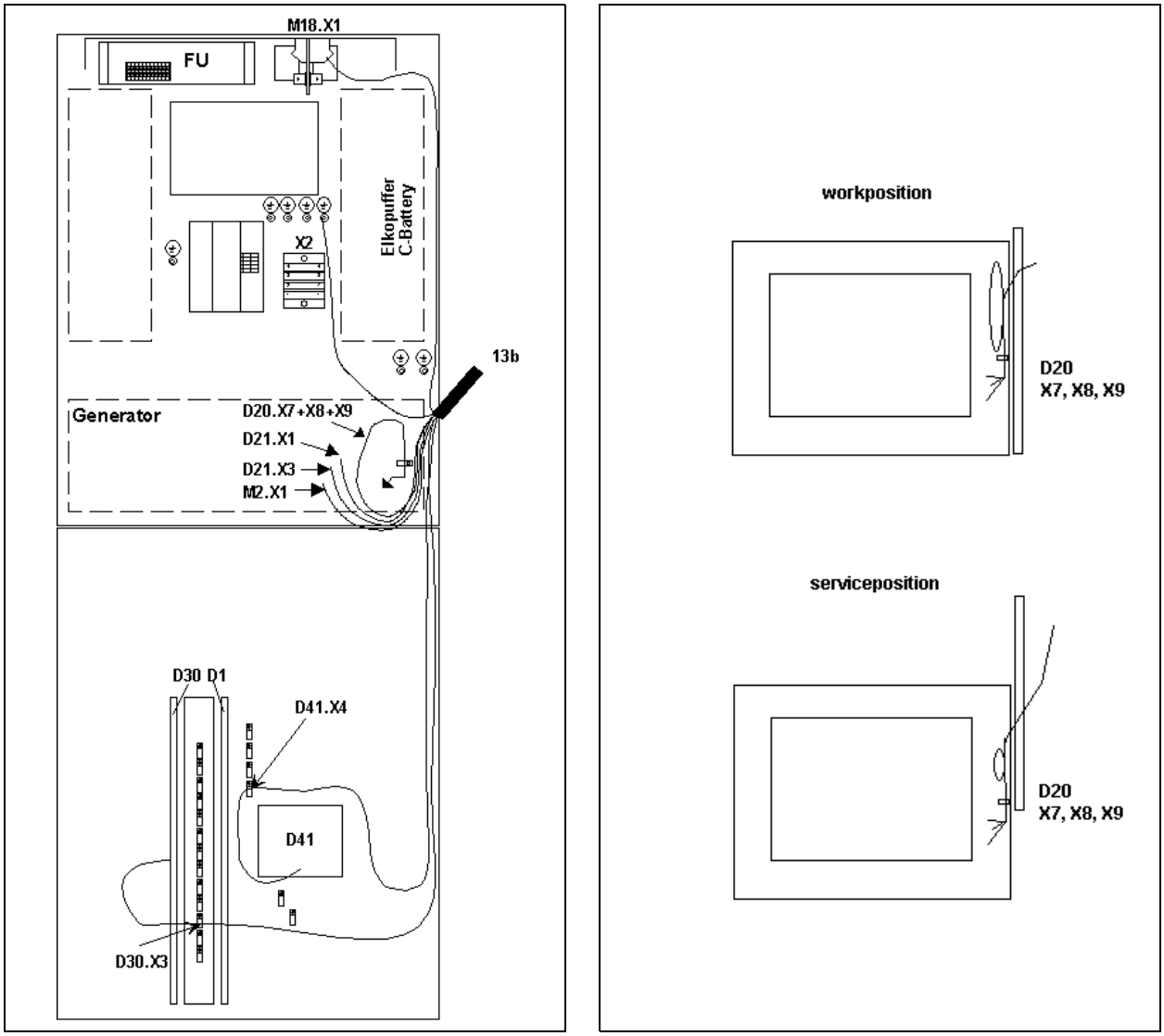



Fig. 8 Cable_5

- Fig. 8 shows the open E-box and the wiring of connection 13b.
- When routing cables in the E-box, ensure that the cover can be opened and closed without crimping or stretching the cables, or loosening the plug connection.
- When routing cables to the generator, ensure that the generator can be put in service and work positions without crimping or stretching the cables or loosening the plug connection.
- Route cable 13b of the protective conductor as shown in Fig. 8 and secure.
- Cables D20, X7, X8, and X9 should be fastened to the cable clamps to a torque of 4,8 Nm. As in Fig. 8, loop the cables and attach shield. Ensure that the cables do not become crimped or torn when moving the generator. Route cables D21.X1 and X3 to board D21, M2.X1 to plug M2.X1 and connect.
- Route cables D30.X3 and D41.X4 with the specified plugs according to Fig. 8 and attach the shields using cable clamps. Ensure a good connection between the shielding and the ground.

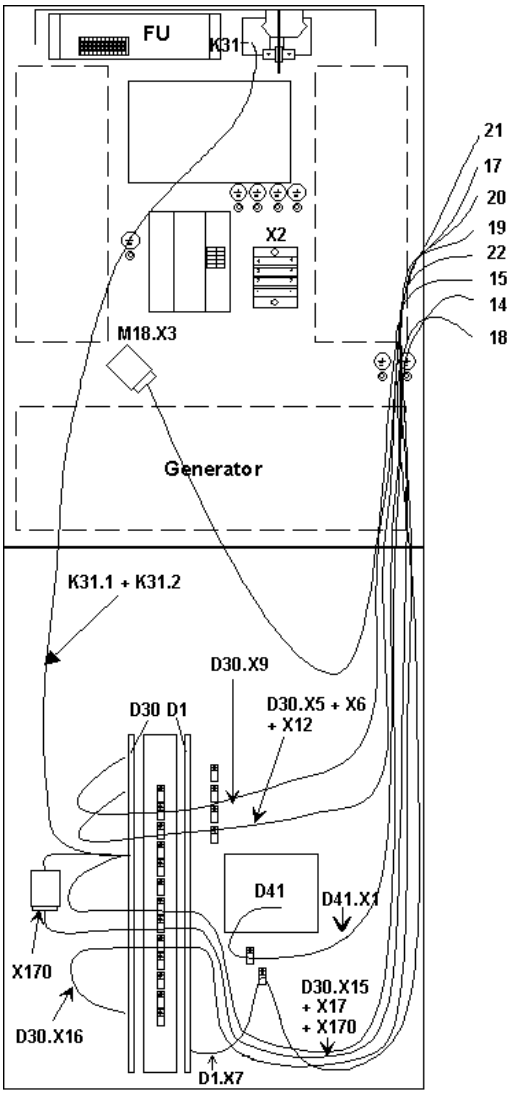



Fig. 9 Cable_6

- Fig. 9 shows the open E-box and the wiring of connection 13a.

- When routing cables in the E-box ensure that the cover can be opened and closed without crimping or stretching the cables, or loosening the plug connection.
- Connect cable 21 with plug M18.X3 to plug M18.X3 (loose cable end on the internal cable harness).

- Route all other cables and attach the shields using cable clamps. Ensure a good connection between the shielding and the ground.
- Route cable 18 to board D1 and connect with plug X7.
- Route cable 14 to board D30 and connect.
- Route cable 22 to board D30 and connect with plug X15 and X17. Route the additional cables K31.1 and K31.2 to relay K30 and connect.
- Route cable 15 to the additional plug X170 on cable 22 and connect.

- Route cables 17 + 20 to board D30 and connect the plug according to the diagram.
- Route cable 19 to board D41 and connect according to the diagram.
- Plug cables D41.X1.23 and D41.X1.25 on the connector X1 (loose cable end on the internal cable harness).

✍ • All plugs and cables were connected as shown in the respective diagrams.

✍ • Attach all cables with cable ties and perform the routing so that the E-box can be opened and closed without crimping or stretching the wire, or loosening the plug connection.

- Attach the cables from the cable clamps to the cable inlet plate and use cable ties as necessary.

✍ • Check all boards and plugs in the electronic unit to ensure that they are positioned firmly.

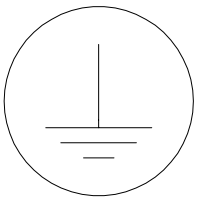
✍ • Check all protective conductor connections in the E-box.

**Installing the electrolytic capacitor buffer**

- Install the electrolytic capacitor buffer, see 3 in Fig. 2 in the E-box. The cables should be located under the buffer, see Fig. 4.
- Reconnect the plug to the electrolytic capacitor buffer X1 and X2.

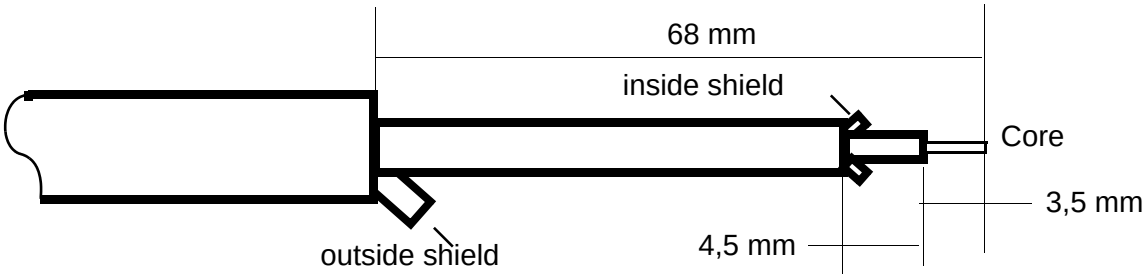
## Wiring the wall socket

- Affix the marking labels



for the protective conductor connections on the wall sockets, near the threaded holes on the bracket. The labels, screws, and contact washers are included in the wall socket kit.

- The cables with cable numbers 1 through 6 in wall socket WD1 should be clamped as outlined in Table A.
- Refer to the colors and codes indicated in the list when making the connections.
- Strip the cable with cable number 7 as shown in the diagram and affix as outlined in the table.




| Wall socket | Cable | E-box | Remarks |
|---|---|---|---|
| X10.A1 | BAS | X1.A1 | Coaxial plug |
| X10.A2 | Inside shield | X1.A2 | Shielding |
| X1.23 | Outside shield | X1.18 | Shielding |

- Use the instructions to once again check the entire wiring.

**NOTE**

**The color or code of the individual wires must be clearly entered in table A and B under the "Wire color / code" column. This is necessary for both the installation and service.**

## Wiring the external keyboards, if applicable

- Install and connect the keyboard as described in Chapter 1 under the heading, "Installing an additional keyboard," if applicable.
- If an additional keyboard is available, the cable should be connected as outlined in Table B, cable harness no. 18 for the wall console **or** for the monitor suspension system.
  - If a wall console is being used, the supplied Sub-D plug should be attached to the keyboard side cable end (Fixed point K5).
  - The supplied Sub-D plug should be attached to the cable going to the terminal block on the stand and connected to X5 when it is used with the monitor suspension system.

## Wiring the pre-transformers, if applicable

- If the external monitors have a line voltage not equal to 230 volts, an on-site pre-transformer with the specific voltage for the number of monitors and an output voltage of 230 volts must be installed, fused according to the expected load and clamped to cable no. 9, Table A.

## Wiring the external monitors, if applicable

- If external monitors are available, the additional cables shown in Table A, cable no. 9 through 12 must be clamped on, as well as the video cables indicated in Table B, cable harness no. 19 in the Fixed point list.
- The video signal cables should be marked as outlined in Table B, cable harness no. 19 in the Fixed point list and equipped with a BNC plug, see Fig. 6.
- Affix all cables with cable ties.

- Use the instructions to once again check the entire wiring of the monitor suspension system or the external monitors.

## Setting the line voltage of external monitors, if applicable

- The additional external monitors must be set to a line voltage of ~230 volts.
  - Adhere to the voltage setting labels indicated on the monitor.

## Wiring the external radiation display, if applicable

- If an external radiation display (e.g., signal lamp with the message, “Caution Radiation ON") is located above the entrance to the examination room, a cable is routed from the E-box to the lamp activation, also refer to Fixed point overview, cable harness no. 20.
- The connection should be set up as listed in Table A, cable no. 23. Note point ***3**.

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## Functional checks

- All plugs and cables should be secured. Use cable ties if necessary.

### Functional test for the system

**NOTE**

**Pay attention to the rotational direction of the column motor! Lowering and lifting at an incorrect rotational direction can cause the vertical column to move to the upper switch instead of the lower switch. It is then necessary to change the rotational direction on frequency inverter FU. Refer to Chapter 4,Table A, where wires U and V must be switched at cable number 16.**

**NOTE**

**When lowering the C-arm, ensure that the distance between the C-arm and the floor is at least 7 cm.**

- Switch on the on-site power supply.

- Check that the monitor trolley's required line voltage corresponds to the available line voltage at the line voltage socket.
- Connect the monitor trolley connectors to all wall sockets and the power connectors to the power connector socket.

- Check that the compressed air required by the ARCOSKOP is available.
- Start the system.

- Press the "Lower C-arm" button on the control console and carefully lower the C-arm until the end switch kicks in. Measure the distance from the C-arm to the floor.
- Start the system.
- The monitors must display a flicker-free image.

**NOTE**

**If this level is out of tolerance, recheck the 75 ohm terminating resistor of the video chain in question.**

### Checking the column movement

- Start the system.
- The column brakes are not released and the column is hard to move.
- Release the column brakes.

**NOTE**

**The force required to move the column was preset at the factory.**

**In the braking position, the force is set as follows:**

**- articulated arm 1 => approx. 30 Nm**
**- articulated arm 2 => approx. 50 Nm**
**- articulated arm 3 => approx. 70 Nm**

- System view

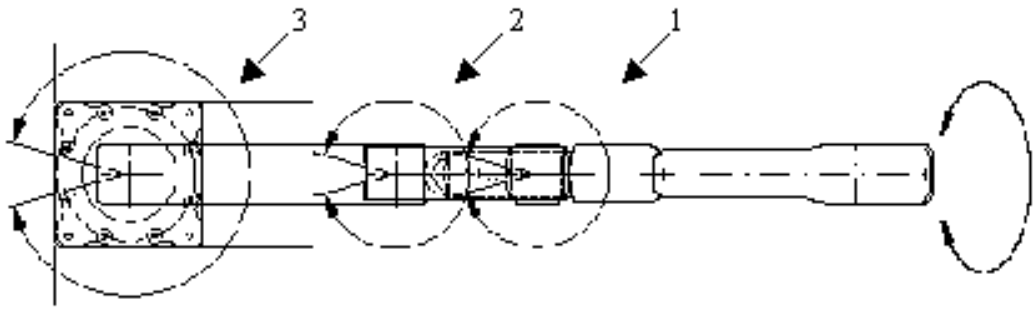


Fig. 1 System view

- **The column must not move on its own when it is in park or in a working position.**.

**NOTE**

**The cable on the support arm adapter cannot be twisted, otherwise the rotating force of the cable could move the column in work mode when the brakes are released.**

- If the force of the brakes is not enough, the brake force can be set using the ARCOSKOP service manual, Chapter 7, "Compressed air brakes."

### Emergency stop button on the control console

- Turn the system on.
- Press the emergency stop button on the console.
- The vertical column motor must now be immobile.
- The orbital movement is hard to bring about.
- Release the emergency stop button.
- The vertical column can once again be moved.
- The orbital movement is again easier to bring about because the built-in servo-motor supports the movement.

### Monitor suspension system, if applicable

- Turn the system on.
- Place the ARCOSKOP in its base position, C-arm vertical and image intensifier (I.I.) to the top.
- Cover the beam port with lead or a folded lead apron.

⚠CAUTION

**Observe radiation protection.**

**In the case of non-compliance, radiation injuries can occur.**

**Wear lead aprons during radiation! Keep a distance!**

- Turn fluoro on briefly e.g., release fluoro on the foot switch. The external radiation displays must light up.

- Switch on the on-site power supply
- Adjust the monitor suspension system to different positions, including the highest position. The monitor suspension should remain in the selected positions and not move by itself

### Emergency power supply shutdown button (emergency shutdown), if applicable

- Turn the system on.
- Release the compressed air brakes so that the ARCOSKOP can be moved easily.
- Press the emergency shutdown button located on the wall.
- In this case, all power to the ARCOSKOP is shut off, the air pressure must be bled from the stand brakes and the stand is difficult to move. Check if the ARCOSKOP can be pushed away when the emergency shutdown button is pressed. If the force of the brakes is too great to move the system, refer to Chapter 7 of the ARCOSKOP service instructions, "Compressed air brakes in the stand," to set the basic brake force.

- Use a voltage measuring device to ensure that there is no power going through the connection cables coming from the main distribution..

⚠CAUTION

**Adhere to the general safety notes when the power is on.**

**In the case of non-compliance there is a risk of physical injury; the system can also be damaged.**

**The work may be performed only according to the valid General Guidelines for the Technical Department ARTD 2, especially the safety instructions TD00-000.860.01.01.**

- Also refer to Chapter 3, System connections, Fixed point list, Cable harness number.
- Unplug the line voltage box and measure at the line voltage box (Cable harness number 3). The power must be switched off.

- The external monitors, if applicable, are tested on contacts 1 and 3 in the E-box as outlined in Chapter 4,Table A, cable number 9, EB, Relay K30 (Cable harness number 2). The voltage must be off.
- Release the emergency shutdown button.

## Closing the housing

- Turn the system off.
- Do not forget the protective conductor connections.
- Close all monitor trolley housings.
- Install all ARCOSKOP covers.
- Close all covers on the monitor suspension system, if applicable.

## Visual check

- Check that the middle cover of the E-box is properly sealed with silicon. The same applies to the monitor suspension system, if applicable.
- Ensure that all covers are attached correctly.

- Check for any damage to the system.

## Start-up of system

- The latest version of the ARCOSKOP Start-up manual should be used to start the system.
- If numerous fluoro and reference monitors are being used, check the image quality of all monitors with the IQ Quick Test (Image quality quick test).

## Installation checklist

| | O.K. X |
|---|---|
| • Stand flange attachment | |
| - Room height and height of intermediate ceiling were checked | |
| - Attachment to the appropriate torque of 70 Nm | |
| • C - arm | |
| - Height adjustment to the appropriate torque of 25 Nm | |
| - C-arm flange tightened to the appropriate torque of 25 Nm | |
| - Minimum distance of 7 cm between C-arm and floor | |
| • Interface board | |
| - Compressed air hose connected | |
| - There is sufficient compressed air for the ARCOSKOP | |
| • E-box | |
| - All plugs and cables have been plugged in and connected according to the outline | |
| - The cables have been fastened to metal with the right cable clamps and shielding | |
| - Cabling completed so that cables and connectors will not be torn or otherwise damaged | |
| - All protective conductor connections are complete | |
| - All boards and plugs have been checked for sturdy positioning | |
| • Wall outlets | |
| - Wiring is performed according to the instructions | |
| • Monitor trolley | |
| - The line voltage of the monitor trolley corresponds to the available line voltage | |
| - Selected options are installed | |
| • Monitor suspension system, if available | |
| - Attachment to appropriate torque of 70 Nm | |
| - Wiring was performed as outlined | |
| - Monitor suspension remains in selected position | |
| • Emergency stop button on the control console | |
| - The motorized support for the vertical column and the orbital movement is locked | |
| • Emergency shutdown button (shuts system down in an emergency) | |
| - The power supply lines to the ARCOSKOP system, monitor trolley, and E-box are switched off | |
| • System visual check for damage was performed | |

**Once the pre-installation is complete, the protocols should be sent to TDPS 3.**

**A copy stays with the system and is filed in the Operator Manual.**

| Location, date | Installation team member | Siemens project manager |
|---|---|---|
| | Printed name | Printed name |

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# Changes to Previous Version 7 - 1

| Chapter | Page(s) | |
|---|---|---|
| 0 | 1 to 4 | Cover page and table of contents adapted<br>Revision status adapted |
| 1 | 19 | New figure inserted |
| 1 | 20 | Plug setting changed |

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